Sun StorEdge™ S1 Array Installation and Maintenance Manual

Sun Microsystems, Inc.
4150 Network Circle
Santa Clara, CA 95054 U.S.A.
650-960-1300

Part No. 816-0080-12
April 2003, Revision A

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Contents

1. **Sun StorEdge S1 Array Overview 1**

Sun StorEdge S1 Array Overview 2

Features 3

Ship Kit Contents 4

Supported Cables 5

Optional Rackmounting Kit for Four-Post Racks 5

Components at the Front of the Array 7

▼ To Remove the Nameplate From the Bezel 9

▼ To Insert the Nameplate Into the Bezel 10

Removing the Front Bezel 11

▼ To Remove the Bezel 11

Components at the Back of the Array 12

Power Switch 12

SCSI ID Switch 13

Back Panel LEDs 14

System Power and System Summary Fault LEDs 14

Autotermination Indication LEDs 14

For More Information 14

Internal Components 15

Power Supply 15
AC Power Supply Option 15
DC Power Supply Option 15
Cooling System 16
Disk Drives 18
Foam Fillers 19
Sun StorEdge S1 Array Software Considerations 19

2. Preparing for Installation and Assembling the Cables 21
Installation Overview 22
Preparing for Installation 22
Hardware Requirements 23
Tools and Equipment Needed 23
Determining the Number of Units to Install 24
Determining Cable Length 24
Assembling the DC Input Power Cable (for DC Power Supplies) 25
Required Connection Materials 25
Overview of Connecting to the DC Power Connector On the Array 27
▼ To Assemble the DC Input Power Cable 28
▼ To Remove a Wire from the DC Connector (if needed) 32
▼ To Connect the Strain Relief Housing With the DC Connector 32

3. Installing the Sun StorEdge S1 Array 35
Mounting the Array in a Rack or Cabinet 36
Rack and Cabinet Installation Precautions 36
▼ To Mount the Array Into a Four-Post Rack or Cabinet 37
▼ To Mount the Array Into a Two-Post Rack 48
Setting the SCSI IDs for the Drives 52
Example: Single-Ended SCSI Configuration 52

Example: LVD SCSI Configuration 54

Example: Mixed Single-Ended and LVD SCSI Configuration 55

- To Determine the Drive Bay's SCSI ID Sequence and Base ID 57
- To Set the SCSI IDs for the Drives 58

Connecting the SCSI Cables 59

- To Prepare the Host System 59
- To Connect the SCSI Cables 60

LVD SCSI Example: Cabling Four Arrays in a Daisy Chain 61

- To Cable Four Arrays in a Daisy Chain 61

Connecting and Disconnecting Power Cables 62

- To Connect the AC Power Cable 62
- To Connect the DC Power Cables 64
- To Disconnect the DC Power Cable from the DC Connector 66

Isolating the Chassis Ground Connection (DC Version Only) 66

- To Isolate the Chassis Ground Connection 66

Powering On the Array 67

- To Power On the Array 67
- To Power On the Host System 68

Hot-Swapping a SCSI Device 69

- To Hot-Swap a SCSI Device 69

4. Adding, Removing, and Replacing Drives 73

Removing the Front Bezel to Access the Disk Drives 74

Adding a Disk Drive 74

- To Add a Disk Drive 75

Configuring the Software 76

- To Create a New Solaris Device Entry 76
- To Configure a File System for a New Disk Drive 77

Removing and Replacing a Disk Drive 78

▼ To Remove a Disk Drive 78
▼ To Replace a Disk Drive 79

5. Maintenance Tasks 81

Powering Off the Array 82
▼ To Power Off the Array 82
Troubleshooting 83
Checking Front Panel LEDs 83
▼ To Check the Binary SCSI ID LED Display 86
Checking Back Panel LEDs 88
System Power and System Summary Fault LEDs 88
Autotermination Indication LEDs 89
Cleaning the Sun StorEdge S1 Array Screens 91
▼ To Clean the Front Bezel Screen 91
▼ To Reattach the Bezel's Tethers to the Array 93
▼ To Clean the Back Fan Screens 93
Removing and Replacing an Array 94

A. System Specifications and Site Requirements 95

Physical Specifications 96
Electrical Site Requirements 97
AC Power Requirements 97
Overcurrent Protection Requirements 97
Disconnecting the Power for Servicing 97
DC Source Power Requirements 98
Overcurrent Protection Requirements 99
DC Supply and Ground Conductor Requirements 99
Environmental Specifications 100
Acoustic Emissions 100

LVD SCSI Port Pin Descriptions 101

B. Declaration of Conformity, Regulatory Compliance, and Safety Statements 103

Declaration of Conformity 104

Regulatory Compliance Statements 105

Safety Agency Compliance Statements 109

Figures

FIGURE 1-1 Sun StorEdge S1 Array 2

FIGURE 1-2 SCSI-3 and VHDCI Connectors 5

FIGURE 1-3 Front of Sun StorEdge S1 Array With Bezel 7

FIGURE 1-4 Front of Sun StorEdge S1 Array With Bezel Removed 8

FIGURE 1-5 Releasing the Left Retaining Lug to Release the Nameplate's Left Side 9

FIGURE 1-6 Pulling the Right Retaining Lug Away From the Bezel 10

FIGURE 1-7 Removing the Front Bezel 11

FIGURE 1-8 Sun StorEdge S1 Array, Back View 12

FIGURE 1-9 Power Switch 12

FIGURE 1-10 SCSI ID Switch 13

FIGURE 1-11 Back Panel LEDs 14

FIGURE 1-12 AC Power Connector on the Back of an AC Array 15

FIGURE 1-13 DC Power Connectors on the Back of a DC Array 16

FIGURE 1-14 Airflow Requirements (Front and Back) 16

FIGURE 1-15 Airflow Requirements (Open Rack) 17

FIGURE 1-16 Airflow Requirements (Closed Rack) 17

FIGURE 1-17 Disk Drives in the Sun StorEdge S1 Array 18

FIGURE 2-1 DC Connector 25

FIGURE 2-2 Strain Relief Housing 26

FIGURE 2-3 Cage Clamp Lever 26

FIGURE 2-4 Power Connector On the Array 27

FIGURE 2-6 Stripping the Insulation From the Wire 29

FIGURE 2-7 Opening the DC Connector Cage Clamp Using the Cage Clamp Lever 30

FIGURE 2-8 Opening the DC Connector Cage Clamp Using a Screwdriver 31

FIGURE 2-9 Inserting Wires by Color Into the DC Connector 31

FIGURE 2-10 Inserting the Bottom Portion of the Strain Relief Housing 32

FIGURE 2-11 Routing the Wires out of the Bottom Portion of the Strain Relief Housing 33

FIGURE 2-13 Assembling the Strain Relief Housing 34

FIGURE 3-1 Attaching the Side Mount Brackets to the Array 38

FIGURE 3-2 Assembling an Adjustable Bracket for a Sun 72-inch Expansion Cabinet or Sun Fire Expansion Cabinet 39

FIGURE 3-3 Assembling an Adjustable Bracket for a Sun Rack 900 or Standard 19-inch Rack or Cabinet 39

FIGURE 3-4 Attaching the Stud Plate 40

FIGURE 3-6 Fastening the Brackets in Sun StorEdge 72-inch Expansion Rack or Cabinet – Front and Back View (Side Panels Removed for Clarity) 42

FIGURE 3-7 Fastening the Brackets to the Sun Rack 900 or Standard 19-inch Rack or Cabinet 43

FIGURE 3-10 Cable Management Bracket 46

FIGURE 3-12 Attaching Brackets Towards the Front of an Array (for Two-Post Rack Install) 48

FIGURE 3-13 Attaching Brackets Towards the Back of an Array (for Two-Post Rack Install) 49

FIGURE 3-14 Front Mounting the Array in a Two-Post Rack 50

FIGURE 3-15 Back-Mounting the Array Into a Two-Post Relay Rack With Brackets at Back 51

FIGURE 3-16 Example of SCSI ID Drive Assignment Sequence 52

FIGURE 3-18 Four Sun StorEdge S1 Arrays on a Host System With LVD SCSI (Example) 54

FIGURE 3-19 One Sun StorEdge S1 Array and One Netra st D130 Storage Array on a Host System With LVD SCSI (Example) 56

FIGURE 3-20 SCSI ID Switch on the Back of the Array (AC Version) 58

FIGURE 3-21 SCSI IN and OUT Ports on the Back of the Array (AC Version) 60

FIGURE 3-22 Daisy Chaining an Array With a Narrow SCSI Device 61

FIGURE 3-23 Power Connector for the AC Power Cable 62

FIGURE 3-24 DC Grounding Lug Nuts for Connecting the DC Grounding Cable 64

FIGURE 3-26 DC Connectors on the Left Back of the Array 65

FIGURE 3-28 Locating the Chassis Ground Connection Screws 67
FIGURE 3-29 Securing the Chassis Ground Connection Screw 67
FIGURE 4-1 Adding a Disk Drive 75
FIGURE 4-2 Removing and Replacing a Disk Drive 79
FIGURE 5-1 Front Panel LEDs With Bezel 83
FIGURE 5-2 Front Panel LEDs With Bezel Removed 84
FIGURE 5-3 Checking the Binary SCSI LEDs 86
FIGURE 5-4 Back Panel LEDs 88
FIGURE 5-5 Autotermination Indication LEDs in an UltraSCSI or Wide SCSI Daisy Chain 90
FIGURE 5-6 Autotermination Indication LEDs in a Narrow SCSI Daisy Chain 90
FIGURE 5-7 Pulling a Tether Until It Stops 91
FIGURE 5-8 Pushing the Tether to One Side Until it Head Emerges 92
FIGURE 5-9 Pushing the Tether in the Opposite Direction 92
FIGURE 5-10 Pulling the Head of the Tether out of the Array 92
FIGURE 5-11 Cleaning the Front Bezel Screen 93
FIGURE 5-12 Cleaning the Back Fan Screens 93

Tables

TABLE 1-2 Contents of the Rackmount Kit 6

TABLE 1-3 Contents of the Rackmount Accessory Kit 6

TABLE 2-1 Installation Overview 22

TABLE 2-2 Colors and Functions of Wires in a DC Power Cable 28

TABLE 3-1 Number of Arrays Supported in Supported Racks and Cabinets 37

TABLE 3-2 SCSI ID Assignments for Two Sun StorEdge S1 Arrays on a Netra T1 Model 100/105 Server 53

TABLE 3-3 SCSI ID Assignments for Four Sun StorEdge S1 Arrays on a Host System With LVD SCSI 55

TABLE 3-4 SCSI ID Assignments for One Sun StorEdge S1 Array and One Single-ended Storage Array on a Host System With LVD SCSI 56

TABLE 5-1 Front Panel LEDs 84

TABLE 5-2 Binary SCSI ID LEDs 87

TABLE 5-3 Autotermination Indication LEDs 89

TABLE A-1 Physical Specifications 96

TABLE A-2 AC Power Requirements 97

TABLE A-3 DC Power Requirements 98

TABLE A-4 Temperature Specifications 100

TABLE A-5 Humidity Specifications 100

TABLE A-6 LVD SCSI Port Pin Descriptions 101

Preface

The *Sun StorEdge S1 Array Installation and Maintenance Manual* provides installation and configuration information and service procedures for the Sun StorEdge™ S1 array. These instructions are designed for an experienced system administrator.

How This Book Is Organized

Chapter 1 describes the Sun StorEdge S1 array.

Chapter 2 provides information on preparing for installation and assembling DC input cables.

Chapter 3 provides instructions for installing the Sun StorEdge S1 array.

Chapter 4 provides procedures for removing, replacing, or adding disk drives to the Sun StorEdge S1 array.

Chapter 5 contains information about maintenance tasks for the Sun StorEdge S1 array.

Appendix A provides system specifications for the Sun StorEdge S1 array.

Appendix B provides essential safety regulatory, and compliance information and a Declaration of Conformity for the Sun StorEdge S1 array.

Using UNIX Commands

This document might not contain information on basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices.

See one or more of the following for this information:

- *Solaris Handbook for Sun Peripherals*
- Documentation for the Solaris™ operating environment
- Other software documentation that you received with your system

Typographic Conventions

Typeface[1]	Meaning	Examples
`AaBbCc123`	The names of commands, files, and directories; on-screen computer output	Edit your `.login` file. Use `ls -a` to list all files. `% You have mail.`
`AaBbCc123`	What you type, when contrasted with on-screen computer output	`% su` `Password:`
AaBbCc123	Book titles, new words or terms, words to be emphasized. Replace command-line variables with real names or values.	Read Chapter 6 in the *User's Guide*. These are called *class* options. You *must* be superuser to do this. To delete a file, type `rm` *filename*.

1 The settings on your browser might differ from these settings.

Shell Prompts

Shell	Prompt
C shell	*machine-name*%
C shell superuser	*machine-name*#
Bourne shell and Korn shell	$
Bourne shell and Korn shell superuser	#

Related Documentation

Application	Title	Part Number
Late-breaking information	*Sun StorEdge S1 Array Product Notes*	816-0081
Configuration information	*Sun StorEdge S1 Storage Subsystem Manager 2.0 User's Guide*	806-5587
Sun Cluster information	*Sun Cluster 3.0 U1 Hardware Guide*	806-7070

The Sun StorEdge S1 array documents are available for download at:

```
http://www.sun.com/products-nsolutions/hardware/docs/Network_Storage_Solutions/Workgroup/AC100_DC100
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CHAPTER 1

Sun StorEdge S1 Array Overview

This chapter describes the components of the array, except for the disk drives. For information on the drives, refer to the disk drive documents that you received with the array. This chapter is organized as follows:

- "Sun StorEdge S1 Array Overview" on page 2
- "Features" on page 3
- "Ship Kit Contents" on page 4
- "Components at the Front of the Array" on page 7
- "Components at the Back of the Array" on page 12
- "Internal Components" on page 15
- "Sun StorEdge S1 Array Software Considerations" on page 19

Sun StorEdge S1 Array Overview

The Sun StorEdge S1 array is a Low Voltage Differential (LVD) Ultra3 SCSI unit that is 1 RU (1.73 inches) in height. The thinness of the unit enables you to stack many units in a single rack. The array has a single power supply (available in AC or DC versions) and up to three hot-swappable, LVD SCSI disk drives. Because the array supports LVD SCSI, you can connect up to four arrays to one LVD SCSI bus.

Note – The Sun StorEdge S1 array also supports single-ended drives. If single-ended drives are used, those drives default to single-ended speeds. The entire array defaults to single-ended mode if connected to a single-ended SCSI bus or to a single-ended host bus adapter.

FIGURE 1-1 Sun StorEdge S1 Array

The array accepts up to three 1-inch high drives. For more information on the Sun StorEdge S1 array disk drives, see the following:

- "Disk Drives" on page 18
- "Adding, Removing, and Replacing Drives" on page 73

Features

The Sun StorEdge S1 array has the following features:

- 1 RU form factor, 19-inch rack-mountable, 18.6 inches deep
- Choice of AC or DC power supplies

  Offers isolated ground option and dual input (for DC power model only)
- Three hot-swap SCSI drives
- Front and back LEDs for power and status
- Back SCSI ID base address selector and front LED binary indicators
- Single-channel, self-terminating SCSI-3 high-density connections
- Dual SCSI connections for daisy-chaining or clustering
- Ultra3 SCSI (160 Mbyte/second) interface to the host (also compatible with Ultra SCSI and Ultra2 SCSI interfaces)
- Daisy-chaining of up to four Sun StorEdge S1 arrays on an LVD (low voltage differential) SCSI bus
- Daisy-chaining of up to two Sun StorEdge S1 arrays on a single-ended SCSI bus
- Built-in SCSI LED information card
- Telcordia NEBS level 3 certification
- Sun StorEdge S1 Storage Subsystem Manager software

Note – A data transfer rate of 160 Mbyte/second can be achieved only if the drivers installed on both the host operating system and the system's host bus adapter support 160 Mbyte/second. Refer to the documentation for the operating system and the host bus adapter for more information.

Ship Kit Contents

The ship kit contains the following items:

- Sun StorEdge S1 array with two or three installed disk drives (depending on the configuration you have purchased)
- One of the two following disk drive documents, depending on the speed of the disk drives you ordered:
  - *18 GByte, 1 1-inch, 10K rpm Disk Drive Specifications: SCSI Interface*
  - *36 GByte,1 1-inch, 10K rpm Disk Drive Specifications: SCSI Interface*
- Power connectors
  - AC version: AC power cord
  - DC version: DC connector kit
- 0.8-meter SCSI-3 to SCSI-3 cable (X1134A)
- Side mounting brackets and screws for mounting the array in a 2-post rack
- Antistatic wrist strap
- Sun StorEdge Storage Subsystem Manager 2.0 CD-ROM
- Documentation
  - *Sun StorEdge S1 Installation and Maintenance Manual* (this manual)
  - *Sun StorEdge S1 Product Notes*
  - *Sun StorEdge S1 Storage Subsystem Manager 2.0 User's Guide*

Supported Cables

The following table lists the supported cables you can order from your Sun supplier.

TABLE 1-1 Optional Cables (68 Pin)

Manufacturing Part Number	Marketing Part Number	Description
X6917A	530-2790-11	0.3-meter cable SCSI-3 to SCSI-3 connector
X1132A	530-2452-02	0.8-meter cable SCSI-3 to VHDCI connectors
X1134A	530-2383-01	0.8-meter cable SCSI-3 to SCSI-3 connectors
X3832A	530-2453-02	2-meter cable SCSI-3 to VHDCI connectors
X1139A	530-2384-01	2-meter cable SCSI-3 to SCSI-3 connectors
X3830A	530-2454-02	4-meter cable SCSI-3 to VHDCI connectors
3816A	530-2352-01	4-meter cable SCSI-3 to SCSI-3 connectors
X3831A	530-2455-02	10-meter cable SCSI-3 to VHDCI connectors

- You use a SCSI-3 to VHDCI cable to connect an array to an LVD host bus adapter.
- You use a SCSI-3 to SCSI-3 cable to connect the array to either of the following:
  - A single-ended host bus adapter (with a single SCSI-3 connector)
  - Multiple Sun StorEdge S1 arrays in a daisy chain

VHDCI connectors are narrower and thinner than SCSI-3 connectors, as shown in the following figure.

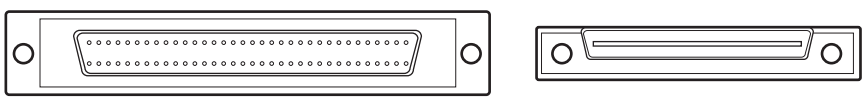

FIGURE 1-2 SCSI-3 and VHDCI Connectors

Optional Rackmounting Kit for Four-Post Racks

The Sun StorEdge S1 array does not ship with brackets needed for mounting the array in a four-post rack or cabinet. You need to order the 19 inch Rackmount Kit, part number X6920A, from your Sun supplier to obtain the needed mounting brackets. For mounting instructions, see "To Mount the Array Into a Four-Post Rack or Cabinet" on page 37.

The rackmount kit contains the parts for two adjustable mounting brackets, along with screws and nuts needed to assemble the brackets, to attach the brackets to the rack, and to secure the array in the rack. The kit also contains two cable mounting brackets and an accessory kit

TABLE 1-2 Contents of the Rackmount Kit

Quantity	Description
2	Adjustable mounting bracket (two pieces each)
2	Cable mounting bracket
8	10-32 x 1/2 inch Phillips screw
4	M4 8 millimeter Phillips flathead screw
4	M4 kep nut
1	Accessory kit (in envelope)

The accessory kit contains additional parts whose use is described in "To Mount the Array Into a Four-Post Rack or Cabinet" on page 37. The Rackmount Accessory Kit envelope contains the components listed in the following table.

TABLE 1-3 Contents of the Rackmount Accessory Kit

Quantity	Description
2	Side mount bracket
2	Stud plate
2	Retaining ring
2	M4 kep nut
4	M4 8 millimeter Phillips flathead screw
8	M6 12 millimeter Phillips screws

Components at the Front of the Array

The front bezel of the array has five LEDs on the left and a blank nameplate on the right, as shown in the following figure.

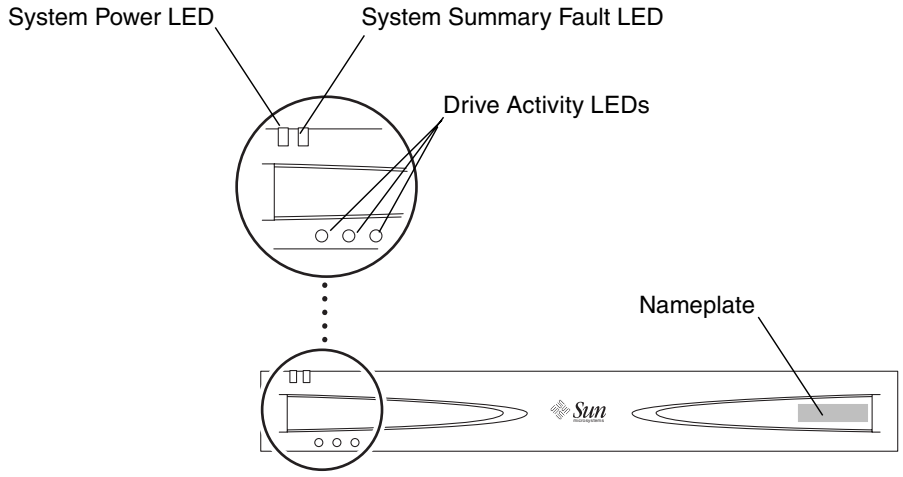

FIGURE 1-3 Front of Sun StorEdge S1 Array With Bezel

You can attach an identifying sticker or label to the nameplate. If you want to remove the nameplate so that you can attach it to another array, see "To Remove the Nameplate From the Bezel" on page 9.

For information about what the front panel LEDs indicate, see "Checking Front Panel LEDs" on page 83.

You can remove the front bezel to access hard drives and to view the SCSI ID LEDs. For how to remove the bezel, see "To Remove the Bezel" on page 11.

The SCSI LEDs are shown in the following figure. A pull-out card attached to the system summarizes the LED information. For more information about using these LEDs, see the following:

- "Checking Front Panel LEDs" on page 83
- "To Check the Binary SCSI ID LED Display" on page 86.

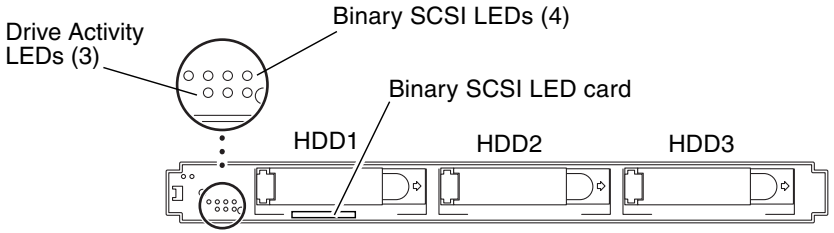

FIGURE 1-4 Front of Sun StorEdge S1 Array With Bezel Removed

▼ To Remove the Nameplate From the Bezel

You can place a label onto the front of the nameplate. This nameplate is removable so you can easily transfer a label onto another system, by following the instructions below:

1. **Press the left end of the nameplate towards the right (**FIGURE 1-5**).**

   Pressing the left of the nameplate towards the right releases the retaining lug on the left of the bezel and causes the nameplate to swing out from the bezel.

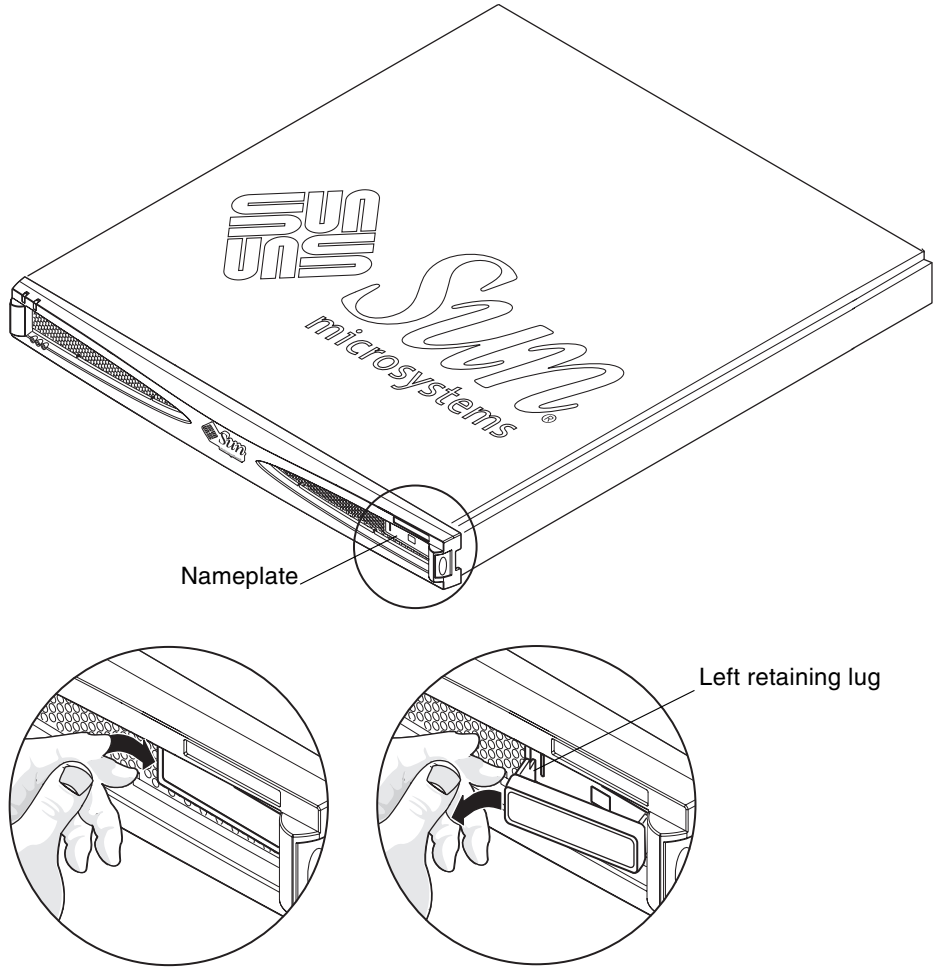

FIGURE 1-5 Releasing the Left Retaining Lug to Release the Nameplate's Left Side

2. **Pull the retaining lug on the right away from the bezel so that the nameplate comes free of the bezel (see** FIGURE 1-6**).**

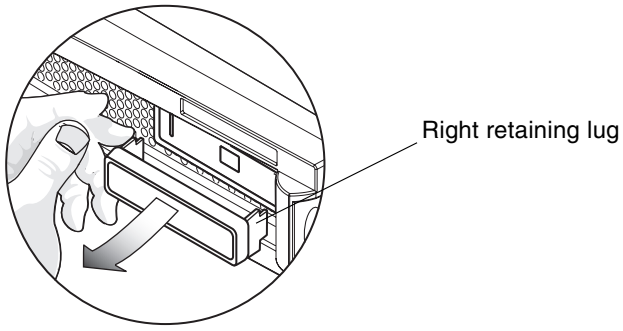

FIGURE 1-6 Pulling the Right Retaining Lug Away From the Bezel

▼ To Insert the Nameplate Into the Bezel

- **Insert the nameplate's right retaining lug into its slot in the bezel, then gently push the left retaining lug into its slot until it clicks.**

Removing the Front Bezel

Before you can add or remove disk drives or do other maintenance procedures, you must remove the bezel from the front of the system.

▼ To Remove the Bezel

- **Release the front bezel by pressing the latches on both ends and pulling the bezel away from the array (**FIGURE 1-7**).**

  The bezel is tethered to the system so that it hangs from the front of the chassis after removal.

  For information about how to detach the tethers from the chassis, see "To Clean the Front Bezel Screen" on page 91.

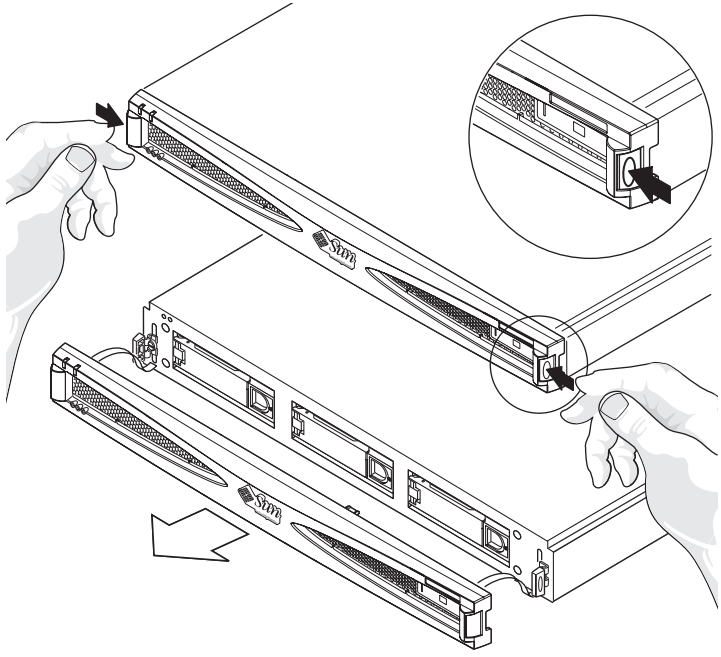

FIGURE 1-7 Removing the Front Bezel

Components at the Back of the Array

The following figure shows the components at the back of an AC version of the Sun StorEdge S1 array.

Note – The AC and DC versions have the same power switch, fans, SCSI ID switch, System and Autotermination LEDs, and SCSI IN and OUT ports. See FIGURE 1-13 for the back of a DC version.

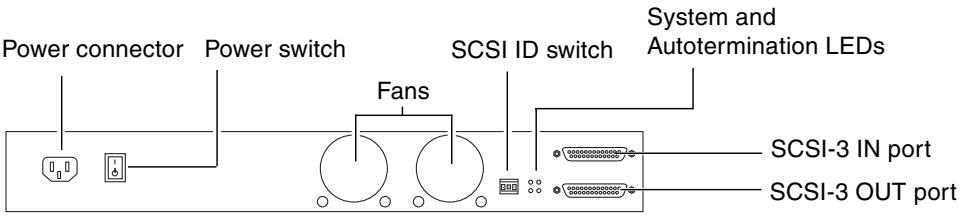

FIGURE 1-8 Sun StorEdge S1 Array, Back View

Power Switch

The array has one rocker power switch to control the power supply, which is illustrated in the following figure.

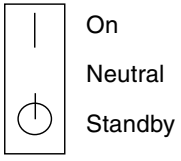

FIGURE 1-9 Power Switch

The following table describes each of the rocker switch's settings.

On	The power supply provides full power to the array.
Neutral	When the switch is released from the On position, the switch returns to the Neutral position, and the power supply remains on.
Standby	The power supply provides standby power to the array.

Caution – Placing the power switch in the Standby position does not completely remove power going to the array. AC or DC input continues to flow to the power supply until you disconnect the power cable from the electrical outlet.

Note – If you remove the power cable from the system with the power switch in the On position, full power returns to the system when you replace the cable.

SCSI ID Switch

The SCSI ID switch illustrated in the following figure sets the base SCSI ID for the drives.

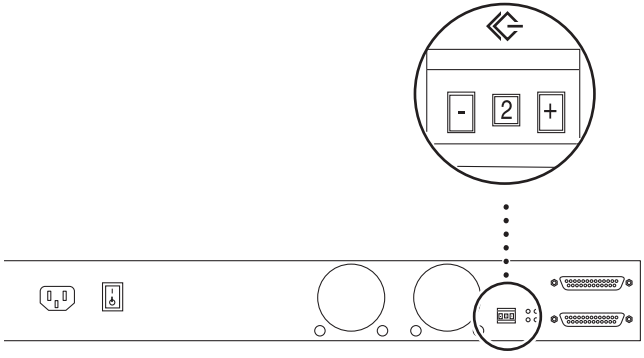

FIGURE 1-10 SCSI ID Switch

See "Setting the SCSI IDs for the Drives" on page 52 for how to use the switch to set the base SCSI ID for the disk drives.

Back Panel LEDs

The following figure illustrates the back panel LEDs.

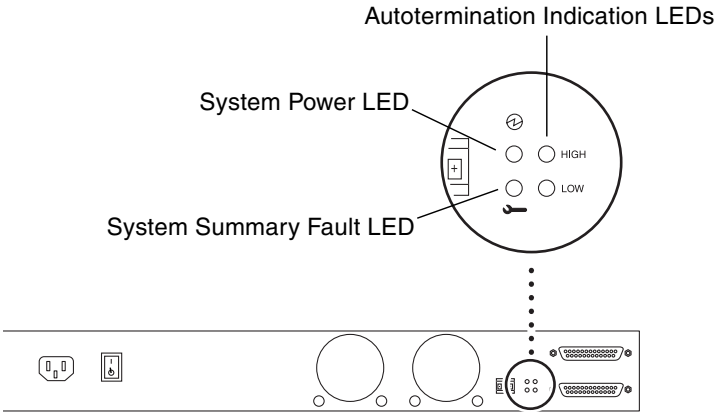

FIGURE 1-11 Back Panel LEDs

System Power and System Summary Fault LEDs

The System Power and System Summary Fault LEDs give the same diagnostic information as the System Power and System Summary Fault LEDs at the front of the array.

Autotermination Indication LEDs

The Autotermination Indication LEDs indicate if the array is part of an UltraSCSI, wide SCSI, or narrow SCSI daisy chain. They also indicate the array's position in the daisy chain.

For More Information

For more information on interpreting back panel LEDs, see the following:

- "Autotermination Indication LEDs" on page 89
- "Checking Back Panel LEDs" on page 88.

Internal Components

Power Supply

The array has a single power supply that provides power to the internal components. The power supply in your system is either AC- or DC-powered.

AC Power Supply Option

An AC power supply converts incoming AC voltage to outgoing DC voltages. The following figure shows an AC power connector on the back of an AC version of the Sun StorEdge S1 array.

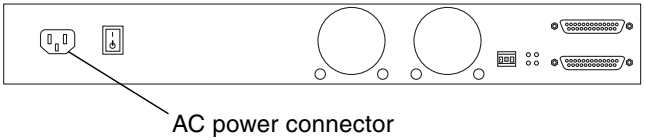

FIGURE 1-12 AC Power Connector on the Back of an AC Array

DC Power Supply Option

The DC power supply converts incoming -48 VDC voltage to outgoing DC voltage. The DC version has two DC connectors so you can connect a single array to two different -48 VDC power sources.

Note – Each DC power source should have a 10-amp circuit breaker.

The following figure shows the two DC power connectors on the back of a DC version of the Sun StorEdge S1 array.

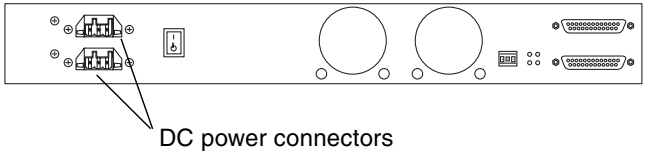

FIGURE 1-13 DC Power Connectors on the Back of a DC Array

Cooling System

The cooling system ensures adequate airflow through the system. The internal fans can achieve a maximum airflow of approximately 20 cfm in free air.

As illustrated in the following figure, the air is drawn through the front of the array and expelled from the back of the array.

FIGURE 1-14 Airflow Requirements (Front and Back)

Airflow requirements differ for an open-rack system and a closed-rack system. FIGURE 1-15 shows the air flowing from the back of the array straight out the open back of an open-rack system.

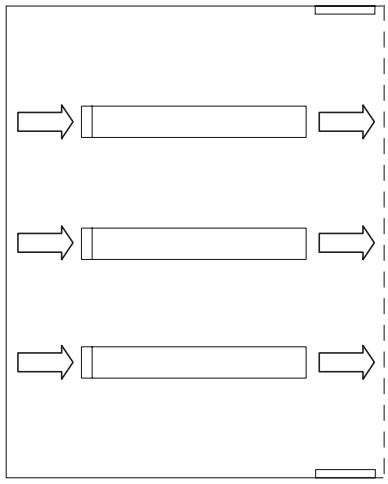

FIGURE 1-15 Airflow Requirements (Open Rack)

FIGURE 1-16 shows the air flowing from the back of the array and then up and out through the exhaust fan at the top back of a closed-rack (cabinet) system.

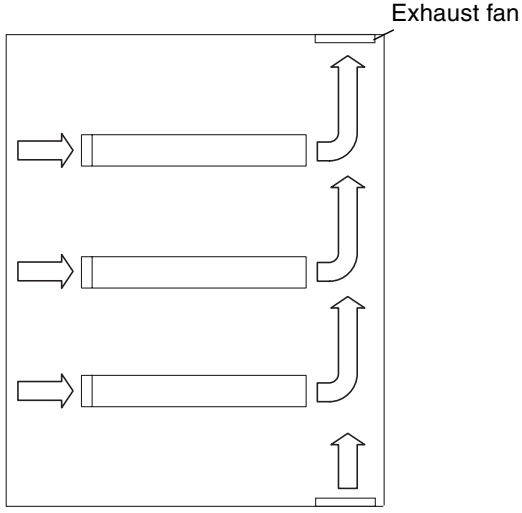

FIGURE 1-16 Airflow Requirements (Closed Rack)

Caution – If the array is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment might exceed the room's ambient temperature. Ensure that the rack environment ambient temperature does not exceed the system's environmental specifications. For more details, see "Environmental Specifications" on page 100.

Disk Drives

The disk drives in the Sun StorEdge S1 array are all hot-swappable. See the disk drive documentation that comes with the array for information about the drives installed in your system.

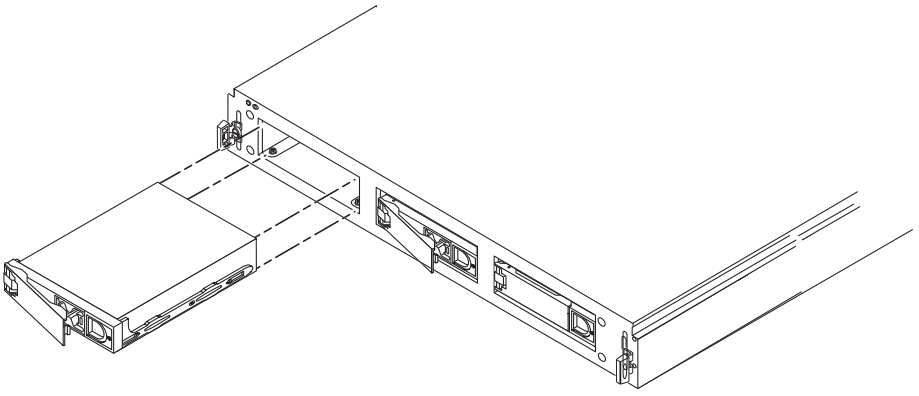

FIGURE 1-17 Disk Drives in the Sun StorEdge S1 Array

The SCSI IDs for the disk drives in the array are set using the SCSI ID switch at the back of the array, as described in, "Setting the SCSI IDs for the Drives" on page 52. You can refer to either the drive LEDs on the front of the array or the SCSI ID switch at the back of the array to determine which SCSI IDs are assigned to the drives. See the following for more information:

- "Checking Front Panel LEDs" on page 83
- "To Check the Binary SCSI ID LED Display" on page 86

Foam Fillers

If you ordered a array with fewer than three disk drives, foam fillers occupy the empty disk drive slots. The foam fillers are air baffles that enable the to maintain maximum cooling. If any slot does not contain a disk drive, you *must* fill the slot with a foam filler to ensure proper cooling.

Caution – If the array is running and a drive slot does not contain a disk drive or foam filler, the array cannot cool properly and might overheat.

Sun StorEdge S1 Array Software Considerations

The array can be used as additional disk storage for an existing host system. Storage management support is provided by the Sun StorEdge S1 Storage Subsystem Manager 2.0 software.

CHAPTER 2

Preparing for Installation and Assembling the Cables

This chapter provides instructions on preparing the Sun StorEdge S1 array for installation. This chapter also provides instructions on assembling the DC input power cables, for arrays that have DC power supplies.

This chapter is organized as follows:

- "Installation Overview" on page 22
- "Preparing for Installation" on page 22
- "Assembling the DC Input Power Cable (for DC Power Supplies)" on page 25

Installation Overview

The following table shows the order of the main installation tasks for the Sun StorEdge S1 array.

TABLE 2-1 Installation Overview

Task	Section
Unpacking the box	"Ship Kit Contents" on page 4
Preparing for installation	"Preparing for Installation" on page 22
Assembling DC input cables (for arrays with DC power supplies)	"Assembling the DC Input Power Cable (for DC Power Supplies)" on page 25
Mounting the Sun StorEdge S1 array in a rack	"Mounting the Array in a Rack or Cabinet" on page 36
Setting the SCSI IDs	"Setting the SCSI IDs for the Drives" on page 52
Connecting the cables	"Connecting the SCSI Cables" on page 59
Powering on the array and host system	"Powering On the Array" on page 67

Preparing for Installation

Caution – Before starting the installation, read the safety, regulatory, and compliance information in Appendix B and observe all applicable precautions.

Before you install the Sun StorEdge S1 array, read Appendix B, and then do the following:

1. Read the following sections to make sure that you have the necessary hardware and equipment to install the array.
2. Read the most-recent version of the *Sun StorEdge S1 Array Product Notes* for updated product information.

   You can find the latest product notes at:

`http://www.sun.com/products-n-solutions/hardware/docs/Network_Storage_Solutions/Workgroup/AC100_DC100`

Note – The URL above is shown on multiple lines for reasons of space. Make sure the entire URL is entered into the browser without any breaks or spaces.

3. Prepare the site for installation, including determining site power and sizing requirements.

   Refer to Appendix A for power, size, and weight statistics.

Hardware Requirements

You need one of the following host configurations to successfully install the array:

- A host system with either an LVD or a single-ended UltraSCSI on-board port
- A host system with a SCSI host bus adapter installed

For LVD (Ultra 2/3) SCSI functionality, the host or the host bus adapter to which you connect your array must be capable of LVD (Ultra 2/3) SCSI speeds. If you connect the array to a wide or narrow SCSI-capable host bus adapter, the array performs at a lower speed.

Tools and Equipment Needed

- An 8 millimeter wrench (for assembling the rackmounting rails)
- A No. 2 Phillips screwdriver
- A small flat-head screwdriver (for attaching the array's front screws to the front posts of the rack, and if you are installing the DC power version of the array, for installing DC input cables)
- 3/16 inch and 9/32 inch or equivalent nut drivers
- An antistatic pad and wrist strap

Determining the Number of Units to Install

If the arrays are installed on a LVD SCSI port on a host system or host bus adapter, up to four Sun StorEdge S1 arrays can be installed.

The following limitations apply to the number of arrays that can be installed in the the described situations:

- If the SCSI port is single-ended, you can install no more than two Sun StorEdge S1 arrays on the SCSI chain.
- When a single-ended device is on a SCSI chain, you can only install one Sun StorEdge S1 array on that chain.

For more information, see the following sections:

- "Example: Single-Ended SCSI Configuration" on page 52
- "Example: LVD SCSI Configuration" on page 54
- "Example: Mixed Single-Ended and LVD SCSI Configuration" on page 55

Determining Cable Length

The total length of cable that can be used for a Sun StorEdge S1 array daisy chain depends on whether or not the host SCSI port or adapter is LVD SCSI or single-ended SCSI.

- If the SCSI port or adapter is LVD SCSI, the total LVD SCSI cable length cannot exceed 12 meters with maximum number (16) of LVD SCSI devices.
- If the SCSI port or adapter is single-ended (SE) SCSI, the total SE SCSI cable length cannot exceed 3 meters.

Assembling the DC Input Power Cable (for DC Power Supplies)

Follow these instructions to assemble the DC input power cable, which you use to connect the DC power supply to the DC power source.

Note – See "Electrical Site Requirements" on page 97 for information on electrical site requirements.

Required Connection Materials

DC connection materials are provided with every array that includes a DC power supply. The following materials are used for assembling and connecting the power supply to the -48V DC power source:

- 4 WAGO DC connectors (2 DC connectors for input cables and 2 spare DC connectors)

  See FIGURE 2-1. Three rectangular holes in the top are used when opening the wire cage clamp using the cage clamp lever. The wires from the DC power source are inserted into holes on the right back of the connector, as shown in "To Assemble the DC Input Power Cable" on page 28.

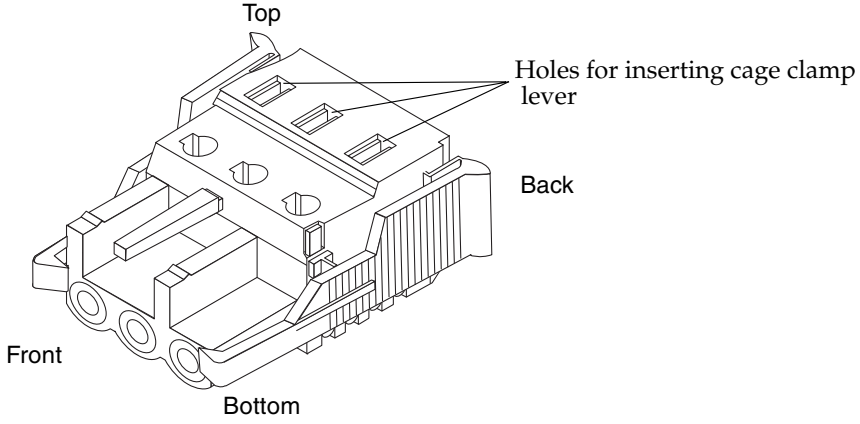

FIGURE 2-1 DC Connector

- 4 WAGO DC strain relief housings (2 strain relief housings for power cables and 2 spares)

  See FIGURE 2-2. This housing is connected to the DC connector and protects the wiring that extends from the back of the DC connector after the wires are installed. Installation is described in "To Connect the Strain Relief Housing With the DC Connector" on page 32.

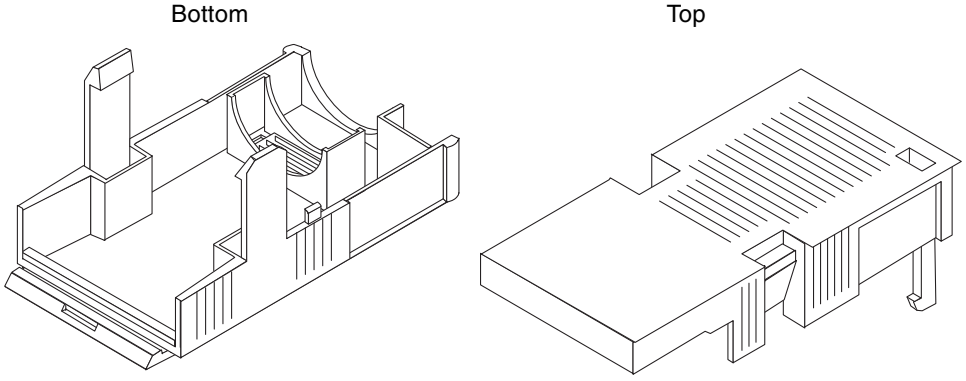

FIGURE 2-2 Strain Relief Housing

- 1 cage clamp lever

  See FIGURE 2-3. The cage clamp lever is used to open the cage clamps before inserting the wiring into the DC connector.

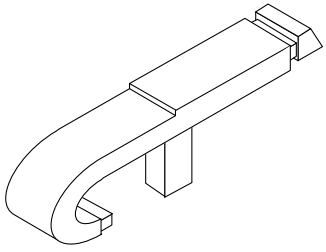

FIGURE 2-3 Cage Clamp Lever

- 4 tie wraps

  The tie wraps are used to bind the wires.

Note – You can order another set of DC connection materials through Sun (part number X949A).

Overview of Connecting to the DC Power Connector On the Array

Two DC power connectors are on the back of each DC version of the array (FIGURE 1-13). A close-up of a DC power connector is shown in the following figure.

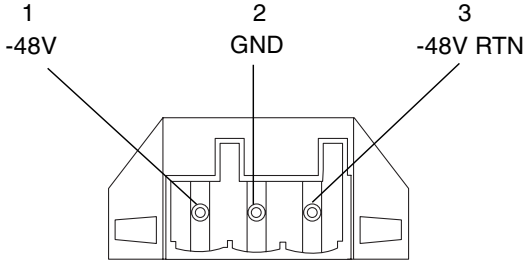

FIGURE 2-4 Power Connector On the Array

The contacts labeled from 1 through 3 from left to right in the above figure have the following characteristics:

1. -48V
2. GND (ground)
3. -48V RTN (return)

After you install the wires into the DC connector as described in "To Assemble the DC Input Power Cable" on page 28, you insert the assembled cable into the power connector on the array, as shown in FIGURE 2-5. (The procedure is described later in this manual, in "To Connect the DC Power Cables" on page 64.)

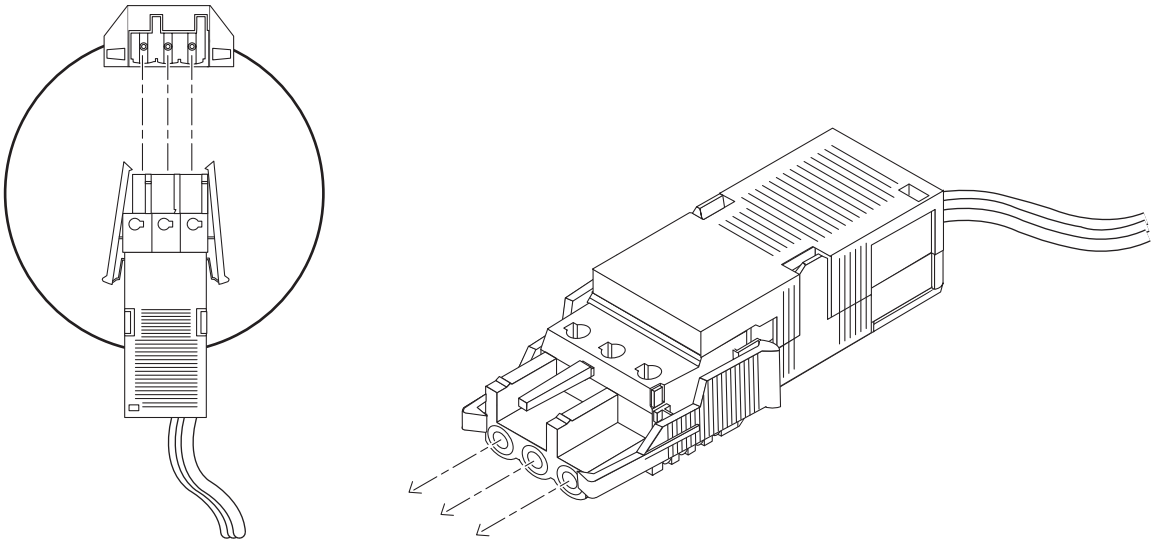

FIGURE 2-5 Inserting the DC Power Cable into the DC Power Supply

▼ To Assemble the DC Input Power Cable

1. **Get a DC connector from the ship kit.**
2. **Verify that the circuit breakers are Off on the circuit that supplies power to the DC power source.**

Caution – Make sure the circuit breakers are Off before proceeding with the next step.

3. **Locate the three wires coming from the DC power source.**

   See the following table for the colors of each of the wires.

TABLE 2-2 Colors and Functions of Wires in a DC Power Cable

Color	Source
White	-48V source
Green and yellow	GND (Ground)
Blue	-48V RTN (Return)

4. **Strip 5/16 of an inch (8 millimeter) of insulation from each of the wires.**

Caution – Do not strip more than 5/16 inch (8 millimeters) from each wire. Stripping more than that amount leaves uninsulated wire exposed from the DC connector after the assembly is complete.

FIGURE 2-6 Stripping the Insulation From the Wire

5. **Use the cage clamp lever to open the cage clamp (**FIGURE 2-7**).**

   a. **Insert the tip of the cage clamp lever into the rectangular hole directly above the hole in the DC connector where you want to insert the first wire.**

      The following illustration shows where to insert the lever when you are preparing to insert the white "Return" wire into the connector. (FIGURE 2-9 shows which colored wires go into which holes.)

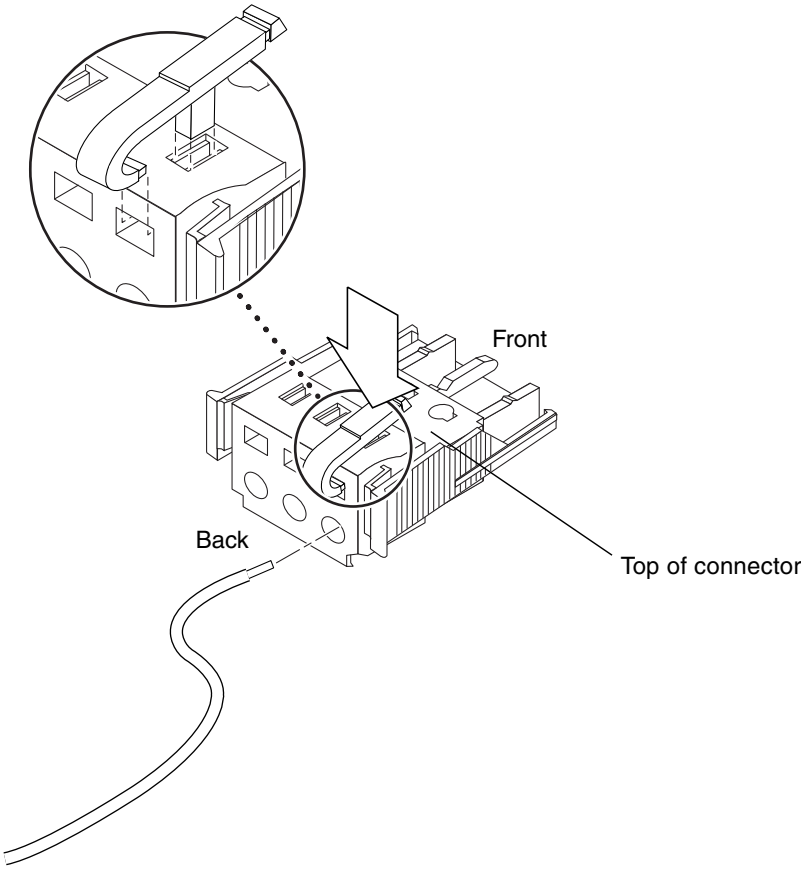

FIGURE 2-7 Opening the DC Connector Cage Clamp Using the Cage Clamp Lever

b. Press down on the cage clamp lever.

The cage clamp opens for this section of the DC connector.

6. Alternately, open the DC connector cage clamp using a small flat-blade screwdriver (FIGURE 2-8**).**

The following illustration shows where to insert the lever to prepare to insert the white "Return" wire into the connector. (See FIGURE 2-9, which shows which wires go into which holes, if needed.)

a. Insert a small flat-blade screwdriver into the rectangular hole directly above the hole in the DC connector where you want to insert the first wire.

b. Press down on the screwdriver (FIGURE 2-8**).**

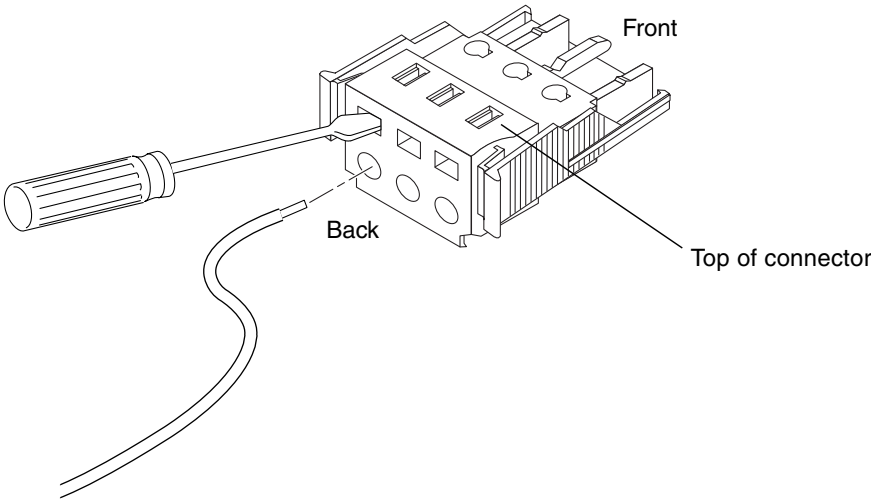

FIGURE 2-8 Opening the DC Connector Cage Clamp Using a Screwdriver

7. **Feed the exposed section of each of the wires in turn into the appropriate hole in the DC connector.**

   FIGURE 2-9 shows which colored wire is inserted into each hole in the DC connector.

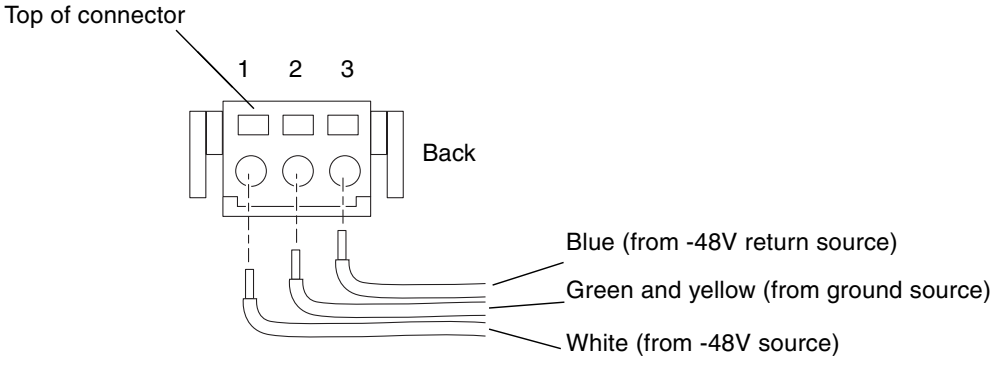

FIGURE 2-9 Inserting Wires by Color Into the DC Connector

8. **Repeat Step 3 through Step 7 to create a second DC input power cable.**

   You connect the first DC input power cable to DC power source A and the second DC input power cable to DC power source B as described in "Connecting and Disconnecting Power Cables" on page 62.

▼ To Remove a Wire from the DC Connector (if needed)

1. **Insert the cage clamp lever or a small screwdriver into the slot directly above the wire (**FIGURE 2-7 **and** FIGURE 2-8**), and press down.**
2. **Pull the wire out.**

▼ To Connect the Strain Relief Housing With the DC Connector

1. **Insert the bottom portion of the strain relief housing into the notch on the bottom of the DC connector until it snaps into place as shown in** FIGURE 2-10**.**

Note – Make sure the strain relief housing snapsfirmly into place. You cannot complete the assembly correctly if the strain relief housing is not secure.

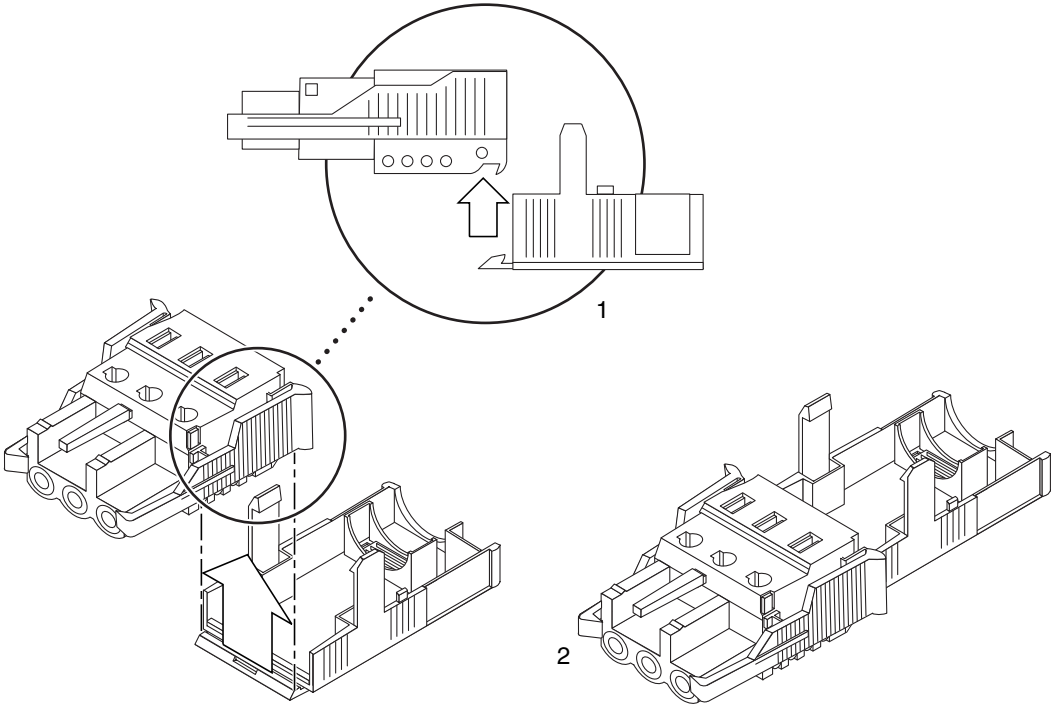

FIGURE 2-10 Inserting the Bottom Portion of the Strain Relief Housing

2. **Route the three wires coming from the back of the DC connector across the bottom of the strain relief housing and out through the opening at the right of the strain relief housing (**FIGURE 2-11**).**

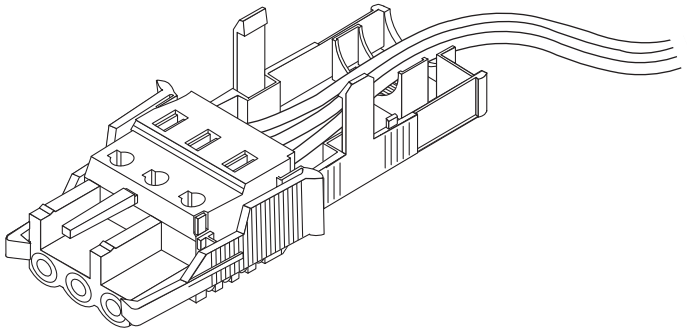

FIGURE 2-11 Routing the Wires out of the Bottom Portion of the Strain Relief Housing

3. **Insert the tie wrap up from the bottom into the opening on the left side of the wires in the strain relief housing (**FIGURE 2-12**).**

   One end of the tie wrap is straight and the other end has a rectangular connector, as shown in the following figure.

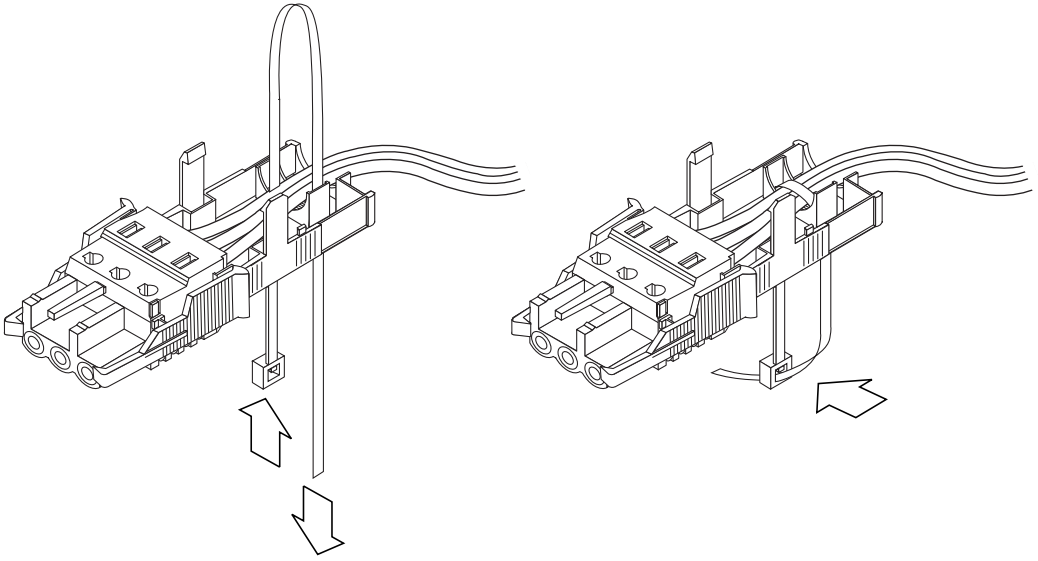

FIGURE 2-12 Securing the Wires to the Strain Relief Housing

4. **Loop the tie wrap over the wires and back down through the strain relief housing, and then pull the flat end of the tie through the connector end until the slack in the tie is taken up, and the wires are tightly bound.**

5. **Lower the top portion of the strain relief housing (**FIGURE 2-13**) so that its front part covers the top rear holes on the DC connector and its three prongs are inserted into the corresponding holes on the housing's bottom.**

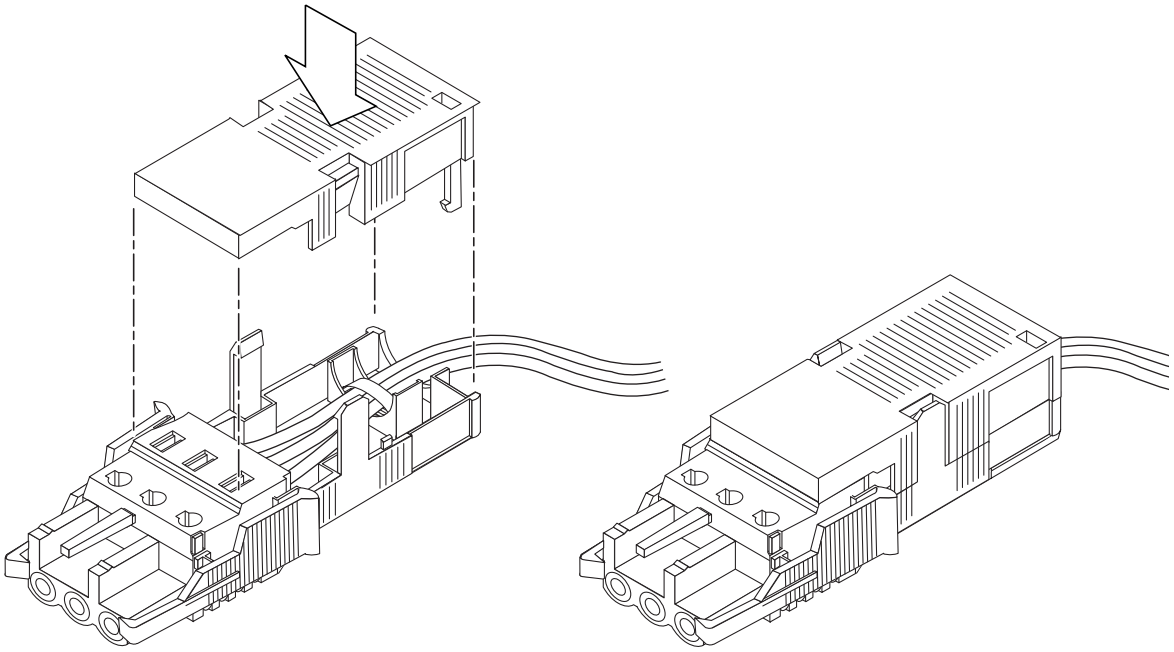

FIGURE 2-13 Assembling the Strain Relief Housing

6. **Push the top and bottom portions of the strain relief housing together until they snap into place.**

   As shown in FIGURE 2-13, the wires extend out of the back of the completed DC cable assembly.

CHAPTER 3

Installing the Sun StorEdge S1 Array

This chapter provides instructions on preparing the area, connecting the cables, and powering on the array.

This chapter is organized as follows:

- "Mounting the Array in a Rack or Cabinet" on page 36
- "Setting the SCSI IDs for the Drives" on page 52
- "Connecting the SCSI Cables" on page 59
- "Powering On the Array" on page 67
- "Hot-Swapping a SCSI Device" on page 69

Mounting the Array in a Rack or Cabinet

The Sun StorEdge S1 array can be mounted in a two-post rack using the brackets supplied in the ship kit, or in a four-post rack or cabinet using separately-ordered brackets described in "Optional Rackmounting Kit for Four-Post Racks" on page 5.

This section covers the following topics:

- "Rack and Cabinet Installation Precautions"
- "To Mount the Array Into a Four-Post Rack or Cabinet" on page 37
- "To Mount the Array Into a Two-Post Rack" on page 48

Rack and Cabinet Installation Precautions

Follow these precautions to avoid injury to yourself and damage to your equipment:

- Install heavier systems toward the bottom to improve stability.
- Install systems from the bottom up.
- Position the racks so that warm air exhaust from the back of one rack does not flow directly into the cool air intake area for another.
- Make sure that the racks are securely fastened to the floor.

Caution – Make sure that each system is grounded to the rack, and that each rack is connected to ground in the building.

▼ To Mount the Array Into a Four-Post Rack or Cabinet

Note – See "Optional Rackmounting Kit for Four-Post Racks" on page 5 for how to order the adjustable mounting brackets needed for a four-post rack or cabinet and for a list of components in the bracket's ship kit.

This procedure can be used to install the Sun StorEdge S1 array into any of the four-post racks shown in TABLE 3-1. The table shows the number of arrays that fit into each type of rack or cabinet.

TABLE 3-1 Number of Arrays Supported in Supported Racks and Cabinets

Rack/Cabinet	Number of Arrays Supported
Sun StorEdge 72-inch Expansion Cabinet	22 with cables that ship with the cabinet. If you order X option cables, part number X319YA, you can increase the number up to 32.
Sun Rack 900 Cabinet	38
Sun Fire Expansion Cabinet	8 in Sun Fire 3800 and 4800 expansion cabinet 7 in Sun Fire 6800 expansion cabinet
Industry standard 19-inch wide telco rack or cabinet	Varies

1. **Remove the parts from the accessory kit envelope.**
2. **Use a Phillips screwdriver to attach the side mount brackets to the left and right sides of the array using the M4 x 8 flat head screws from the accessory kit.**

   As shown in the following figure, the open slot on one end of each bracket extends past the back of the array.

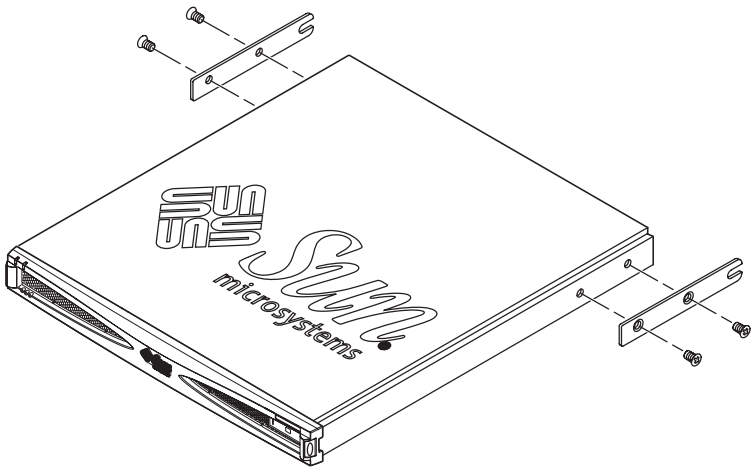

FIGURE 3-1 Attaching the Side Mount Brackets to the Array

3. **Align the two parts of each adjustable mounting bracket with the double-angled ear (A) in the correct position.**

   As shown in the following figures, one piece of the mounting bracket (B) is smooth except for two captive screws that extend from the same side as the mounting ear. The other piece of the mounting bracket (C) has two closed slots, and the end with the longest slot has a double-angled ear (A). Depending on which rack is being used, you position the double-angled end either towards the back or front of the array.

   a. **For a Sun StorEdge 72-inch expansion cabinet or a Sun Fire expansion cabinet, position the double-angled end (A) of the slotted piece (C) at the back, with the screws on the smooth piece (B) extending through the shorter slot of the slotted piece (**FIGURE 3-2**).**

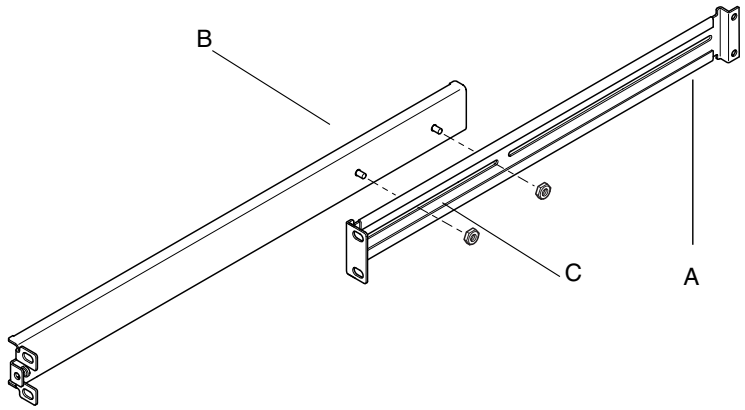

FIGURE 3-2 Assembling an Adjustable Bracket for a Sun 72-inch Expansion Cabinet or Sun Fire Expansion Cabinet

b. For Sun Rack 900 and other industry standard 19" racks or cabinets, position the double-angled end (A) of the slotted piece (C) towards the front, with the screws on the smooth piece (B) extending through the longer slot of the slotted piece (FIGURE 3-3**).**

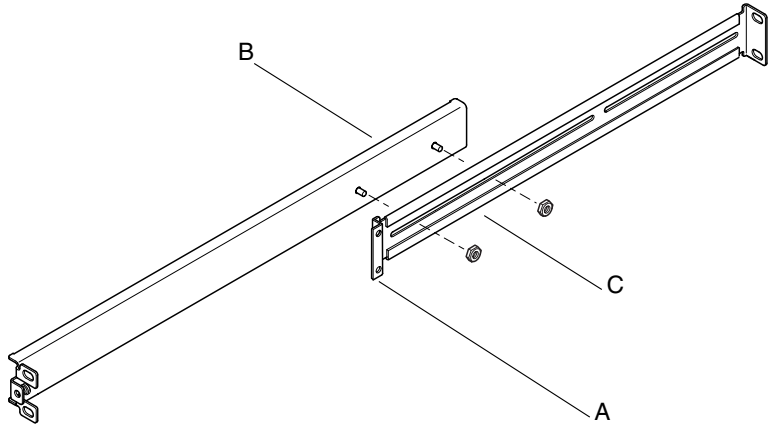

FIGURE 3-3 Assembling an Adjustable Bracket for a Sun Rack 900 or Standard 19-inch Rack or Cabinet

4. Loosely secure the two parts of each bracket, tightening two of the M4 kep nuts supplied in the bracket's ship kit over the screws.

As shown in FIGURE 3-2 and FIGURE 3-3, the nuts are attached from the side of the bracket that faces the rack's posts (C).

5. **Insert the stud plate through the rightmost groove in the grooved bracket.**

   As shown in FIGURE 3-4, insert the stud plate from the same side of the bracket as the nuts were attached in the previous step.

Note – The bottom and top metal edges of the slotted piece of the bracket are folded. The bottom of the stud plate should lie flat between the two folds, and you should not be able to spin the plate.

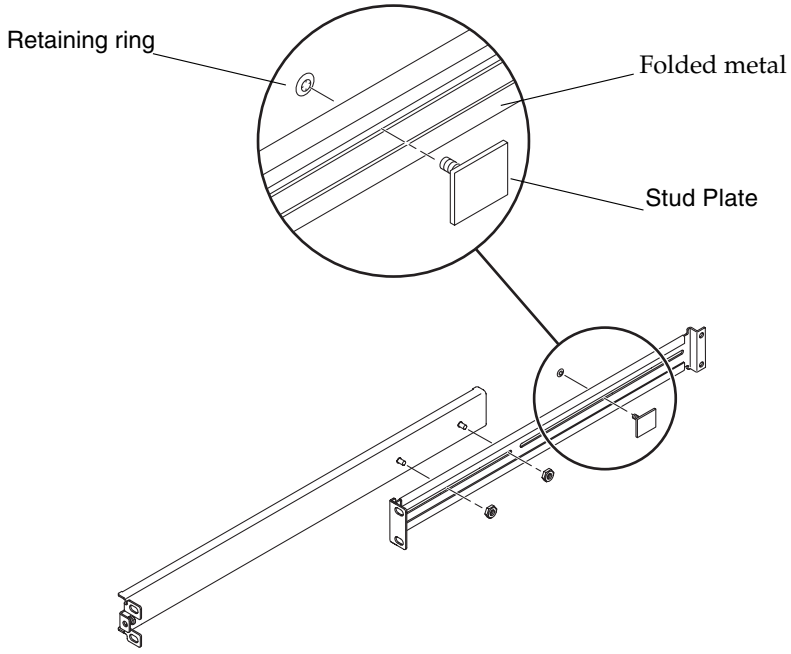

FIGURE 3-4 Attaching the Stud Plate

6. **Slide the retaining ring over the stud.**

   As shown in FIGURE 3-5, make sure the prongs on the retaining ring face away from the stud plate.

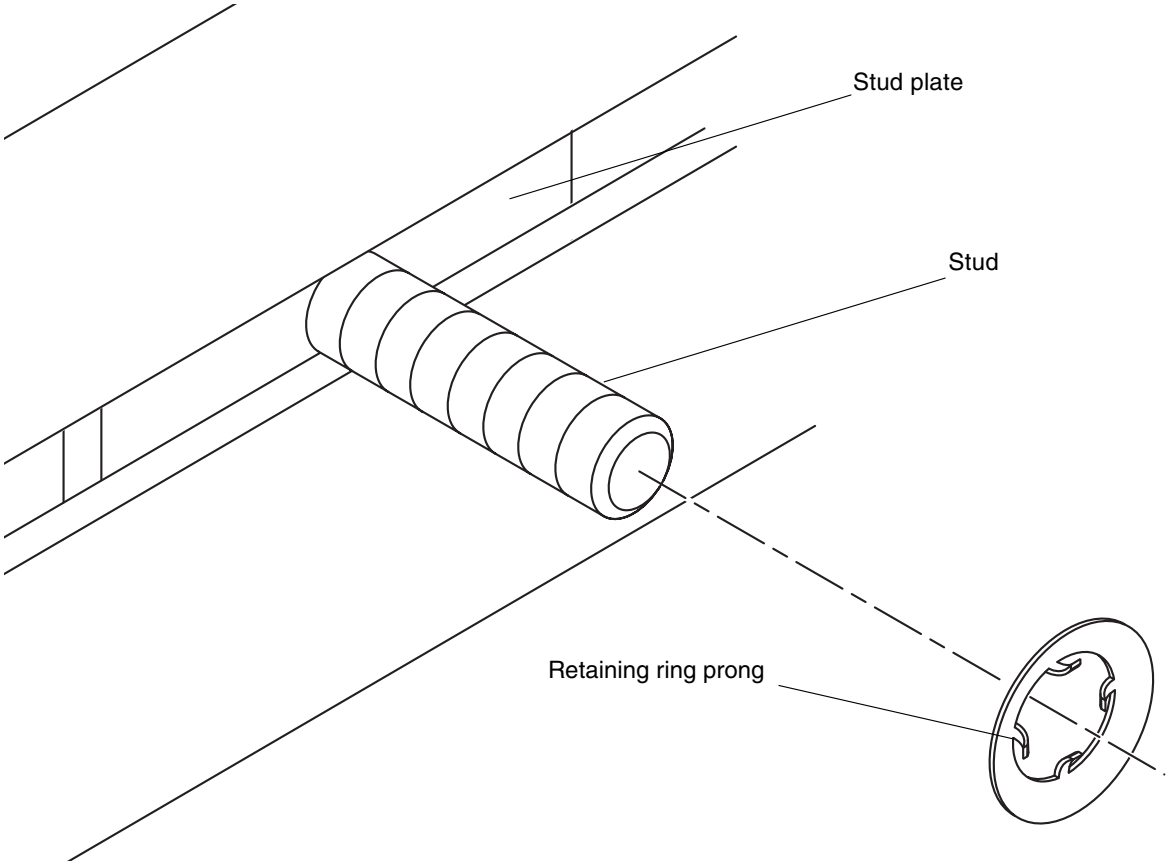

FIGURE 3-5 Facing the Upturned Prongs of the Retaining Ring Away From the Stud Plate

7. **Press the retaining ring towards the bracket, using a 3/16 inch or equivalent nut driver.**

   Make sure the stud plate is firmly connected but that it is still able to slide along the bracket between the two folds.

8. **Measure the distance between the front post and the post to which the back end of each bracket must be attached.**

   - For a Sun StorEdge 72-inch expansion cabinet or Sun Fire expansion cabinet, measure from the front post to the third post from the front of the rack (FIGURE 3-6).

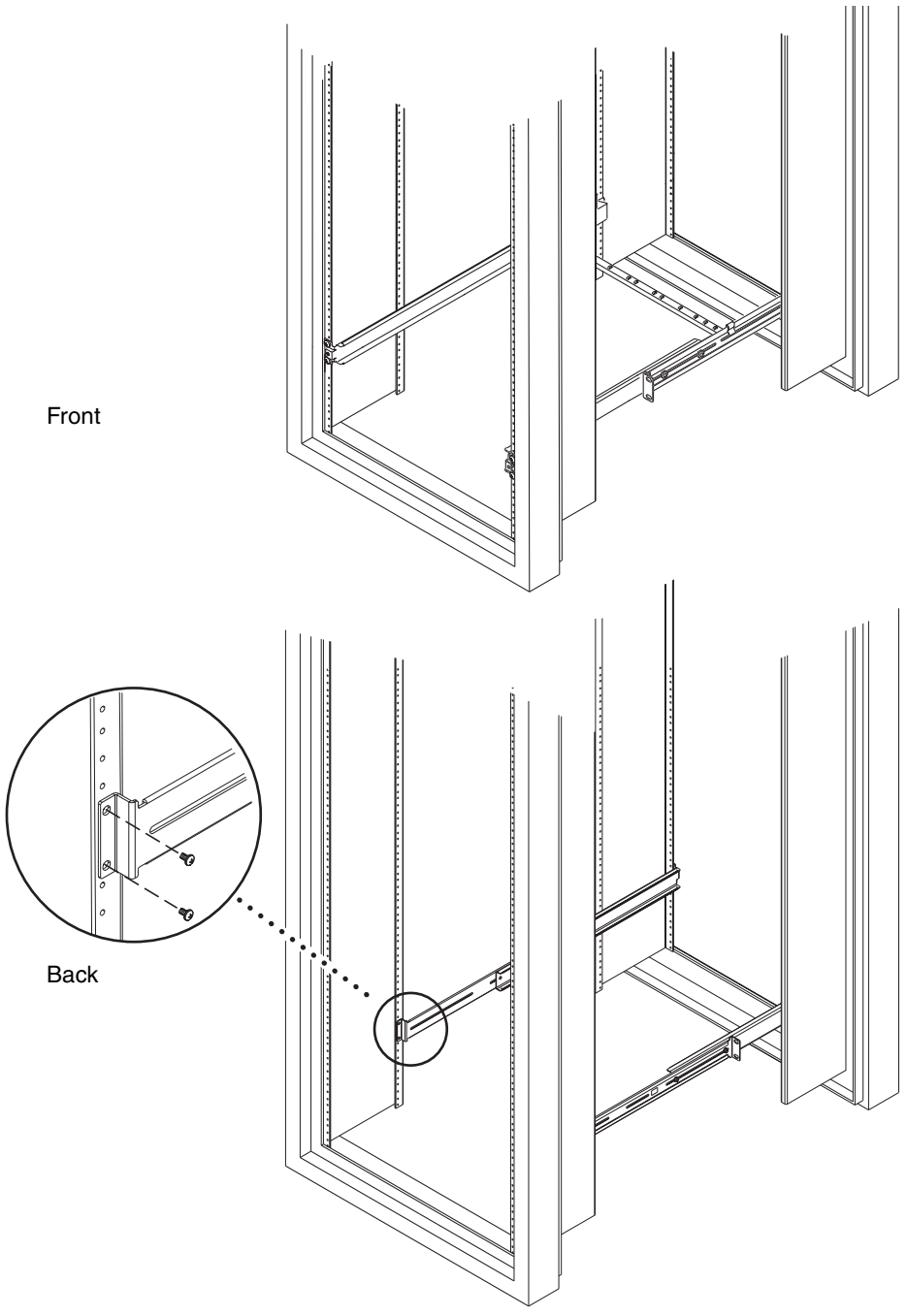

FIGURE 3-6 Fastening the Brackets in Sun StorEdge 72-inch Expansion Rack or Cabinet – Front and Back View (Side Panels Removed for Clarity)

- For a Sun Rack 900 or other industry-standard 19-inch rack or cabinet, measure from the front post to the back post of the rack (FIGURE 3-7).

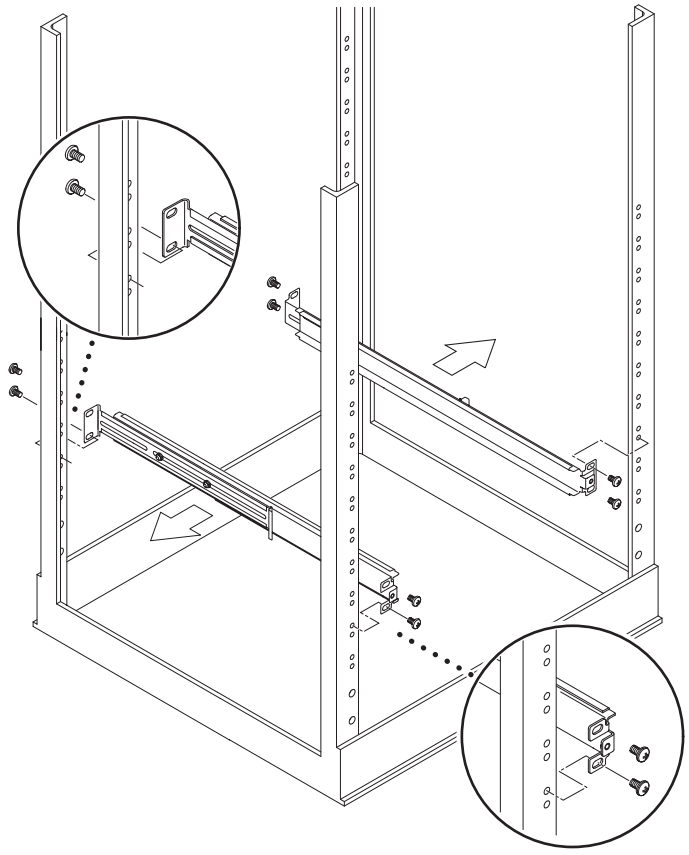

FIGURE 3-7 Fastening the Brackets to the Sun Rack 900 or Standard 19-inch Rack or Cabinet

9. **Adjust each bracket so that the distance between the front and the back mounting ears is approximately the same measurement as obtained in Step 8.**

10. **Align the holes in the bracket with the holes in the suitable posts and insert the appropriate screws, adjusting the depth of each bracket as required to fit.**
    - For the Sun Rack 900 cabinet, insert the M6 x 12 Phillips screws from the rackmount accessory kit.
    - For other standard 19-inch racks or cabinets, insert the 10-32 x 1/2 inch Phillips screws from the bracket's ship kit.

    a. Overlap the front ear of each bracket over the front edge of the front post.

b. Insert two screws into two holes in each bracket's front ear and through the front post, from front to back.

A third hole in the middle of the bracket's front ear is used later when securing the array.

c. For a Sun StorEdge 72-inch expansion cabinet or Sun Fire expansion cabinet, perform the following steps to insert the back screws (FIGURE 3-6**).**

i. Align the screw holes at the back of each bracket over the holes in the third post from the front.

ii. Insert the back screws from the inside to the outside of the rack.

d. For a Sun Rack 900 or other industry-standard 19-inch rack, perform the following steps to insert the back screws (FIGURE 3-7).

i. Align the screw holes at the back of each bracket over the holes in the back post of the rack.

ii. Insert the back screws from the back towards the inside of the rack.

11. Tighten the M4 kep nuts that hold the two halves of the brackets together, using a 9/32 inch or equivalent nut driver.

12. Slide the Sun StorEdge S1 array into the rack as far as it goes (FIGURE 3-8**).**

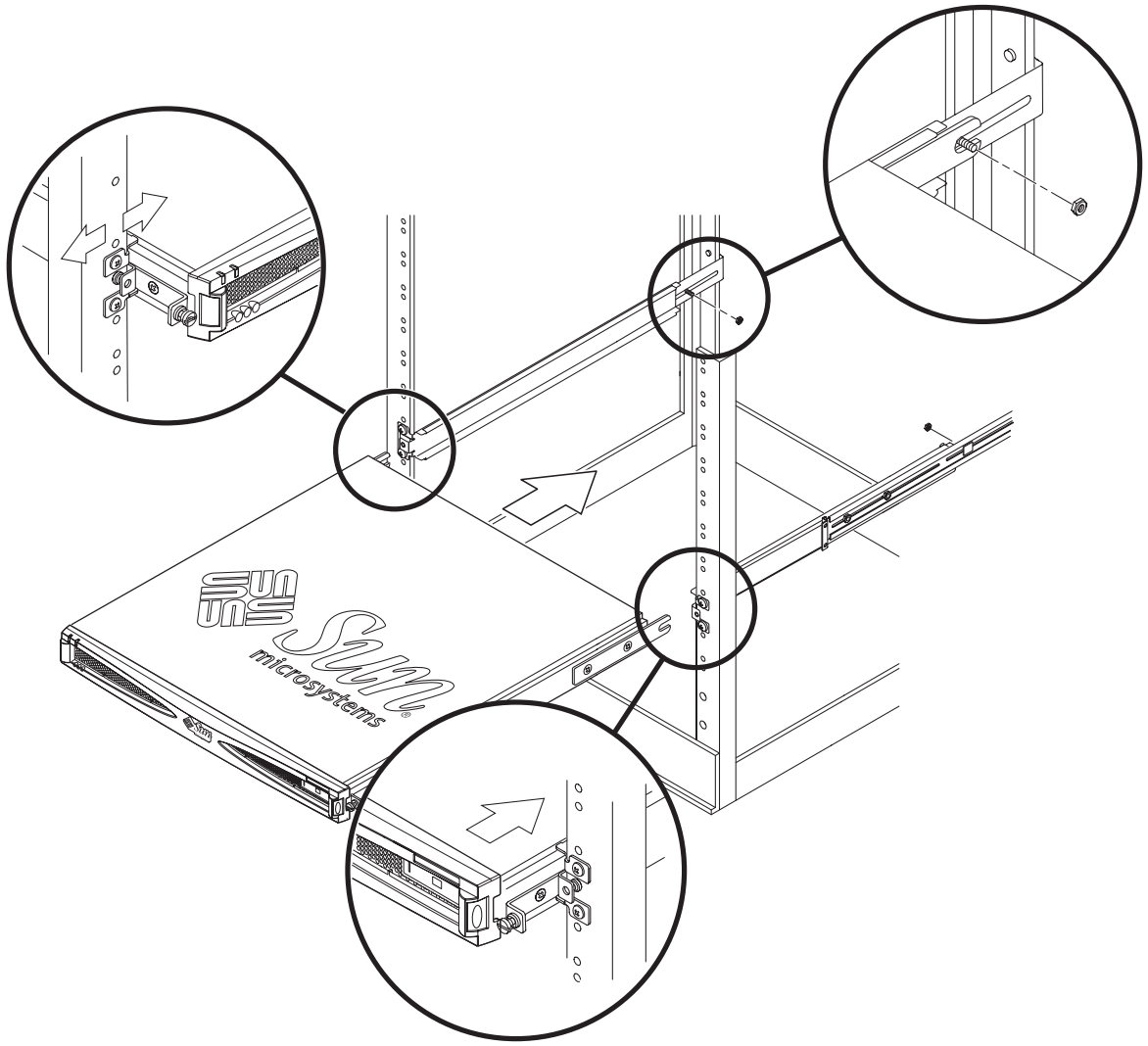

FIGURE 3-8 Sliding the Sun StorEdge S1 Array and Attaching It Into a Rack

13. **Secure the captive screws on the front of the array into the front ear of each bracket on the front posts (**FIGURE 3-9**).**

    a. **If necessary, readjust the bracket ears on the front post to align the system properly.**

    b. **Insert the captive screws on the front edges of the array into the center hole on the front ear of each bracket, and tighten the thumbscrews finger-tight.**

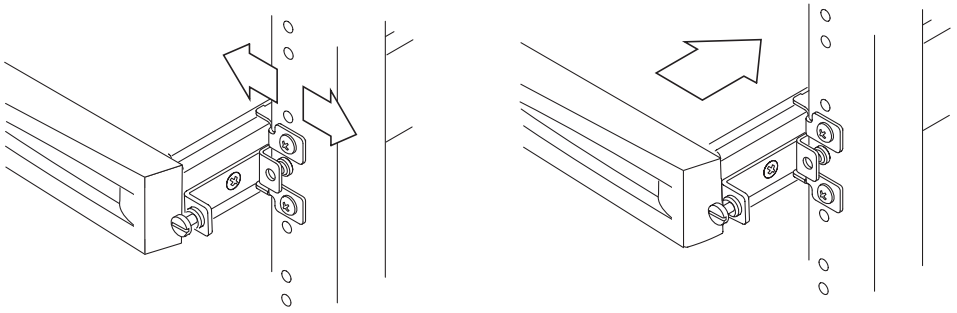

FIGURE 3-9 Adjusting the Mount and Tightening the Thumbscrew

14. **Slide the stud from the stud plate as far as it can go into the open slot on the side bracket that is attached to the back of the array (**FIGURE 3-8**).**
15. **Attach a kep nut from the accessory kit to each stud over its retaining ring, and tighten the kep nut with a 9/32 inch or equivalent nut driver.**
16. **Tighten the screws that hold the brackets in the rack if you have not fully secured them yet.**
17. **Use a straight-edge screwdriver to tighten the thumbscrews at the front to secure the array in the rack.**
18. **Hook the cable management bracket (**FIGURE 3-10**) over the mounting brackets behind the array.**

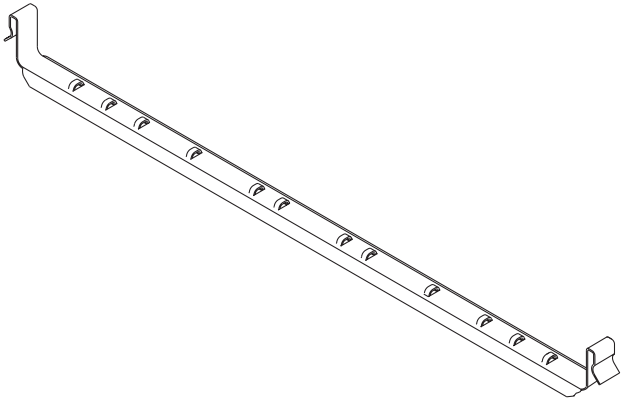

FIGURE 3-10 Cable Management Bracket

As shown in FIGURE 3-11FIGURE 3-11, hook one end onto the left mounting bracket and hook one end onto the right mounting bracket so that the cable management bracket is parallel to the array's back.

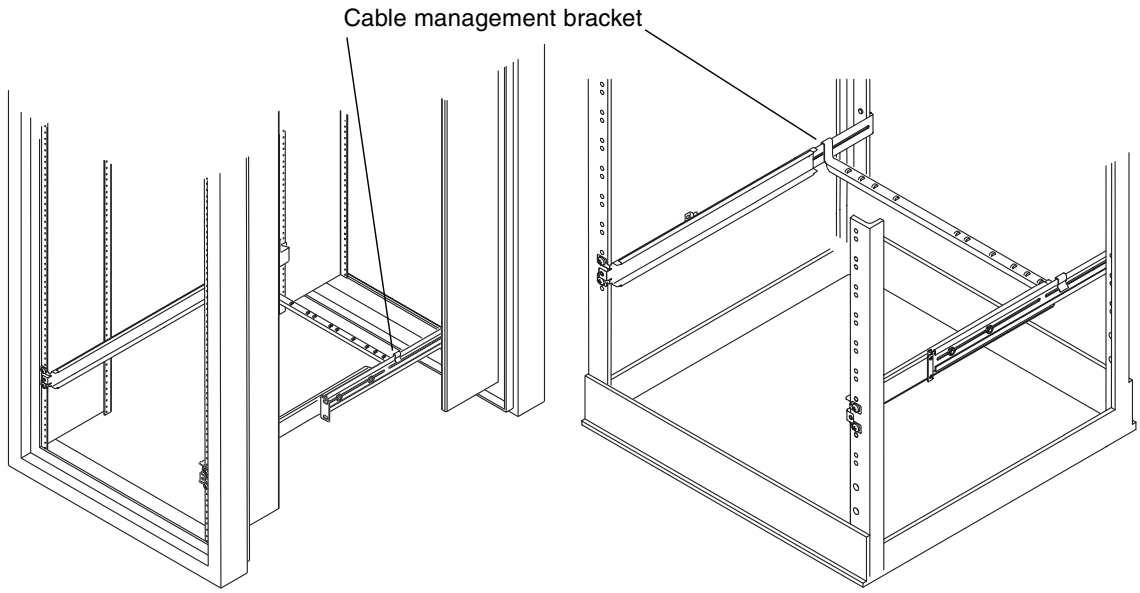

FIGURE 3-11 Cable Management Bracket Installed in Two Kinds of Racks

19. **Run cable ties through the holes in the cable management bracket.**

20. **After you attach the cables to the system, bundle them together and secure them with the cable ties.**

    For information on how to connect the cables see "Connecting the SCSI Cables" on page 59.

▼ To Mount the Array Into a Two-Post Rack

Use the following instructions to install the Sun StorEdge S1 array into a two-post rack, using the brackets and the Phillips head countersunk screws provided in the array's ship kit.

1. **Use a Phillips screwdriver to attach the two brackets to the sides of the array.**

   a. **For front-mounting, insert and tighten two screws through each bracket into the second and third tapped holes toward the front of the array (**FIGURE 3-12**).**

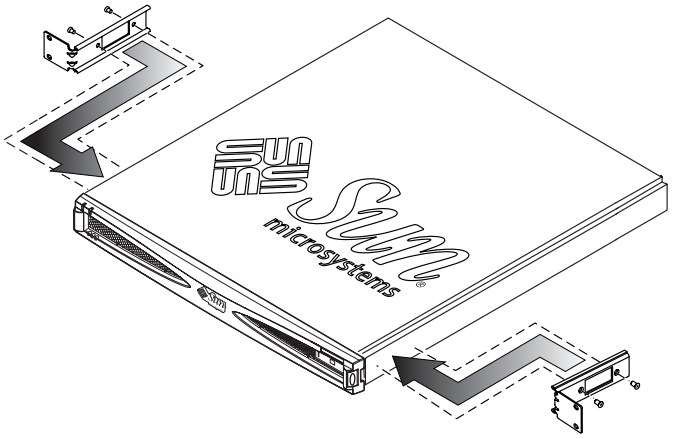

FIGURE 3-12 Attaching Brackets Towards the Front of an Array (for Two-Post Rack Install)

b. For side-mounting, insert two screws through each bracket into the tapped holes towards the back of the array (FIGURE 3-13**).**

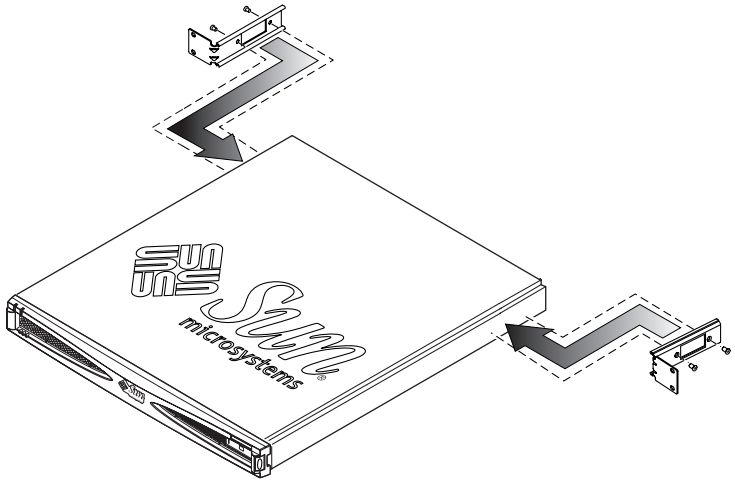

FIGURE 3-13 Attaching Brackets Towards the Back of an Array (for Two-Post Rack Install)

2. Position the array in the rack, insert, and tighten the screws.

a. For front mounting, overlap the holes on the front ear of each bracket over the corresponding holes on the fronts of the posts (FIGURE 3-14**), and insert the screws.**

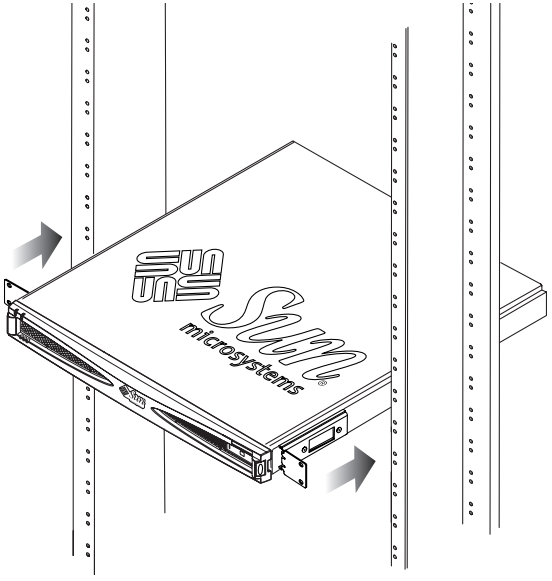

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FIGURE 3-14 Front Mounting the Array in a Two-Post Rack

FIGURE 3-15 shows aligning the ear of each bracket with two holes on the back of the posts.

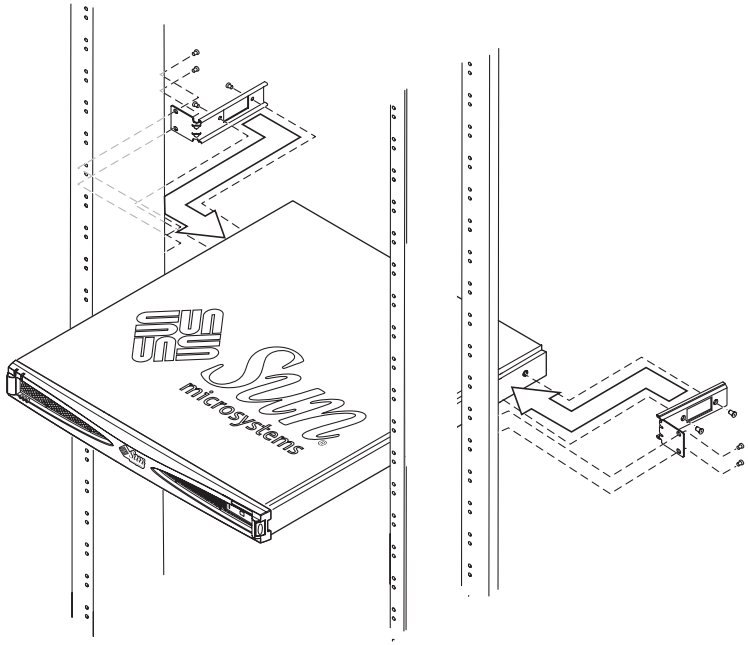


FIGURE 3-15 Back-Mounting the Array Into a Two-Post Relay Rack With Brackets at Back

Setting the SCSI IDs for the Drives

Each of the array's three drive bays needs a SCSI ID assigned, whether or not a disk drive occupies the bay. The three SCSI IDs must be sequential numbers. All SCSI IDs in the series must not be assigned to another peripheral or SCSI controller. So, for example, if you plan to assign SCSI IDs 2, 3, and 4, neither 2, 3, nor 4 can be assigned to any other device. See the following procedure:

■ "To Determine the Drive Bay's SCSI ID Sequence and Base ID" on page 57

This section provides example SCSI ID assignment for several configurations:

■ "Example: Single-Ended SCSI Configuration" on page 52
■ "Example: LVD SCSI Configuration" on page 54
■ "Example: Mixed Single-Ended and LVD SCSI Configuration" on page 55
■ "LVD SCSI Example: Cabling Four Arrays in a Daisy Chain" on page 61

You set the SCSI IDs for the drives by setting only the base address, which is the first number in the sequence of SCSI IDs. For example, in the sequence of SCSI IDs 2, 3, and 4, the base SCSI ID address is 2 (FIGURE 3-16).

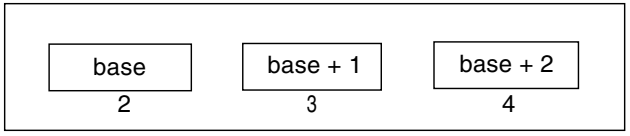


FIGURE 3-16 Example of SCSI ID Drive Assignment Sequence

See this procedure for how to set the base address:

■ "To Set the SCSI IDs for the Drives" on page 58

Example: Single-Ended SCSI Configuration

FIGURE 3-17 and TABLE 3-2 show an example with two Sun StorEdge S1 arrays connected to a Netra T1 Model 100 or Netra T1 105 server's on-board SCSI port. Limitations of this configuration include:

- The maximum number of Sun StorEdge S1 arrays that can be used for this configuration is two, because the Netra T1 servers are single-ended.
- SCSI IDs 0 and 1 are used by the host system's internal drives, and SCSI ID 7 is used by the SCSI controller.

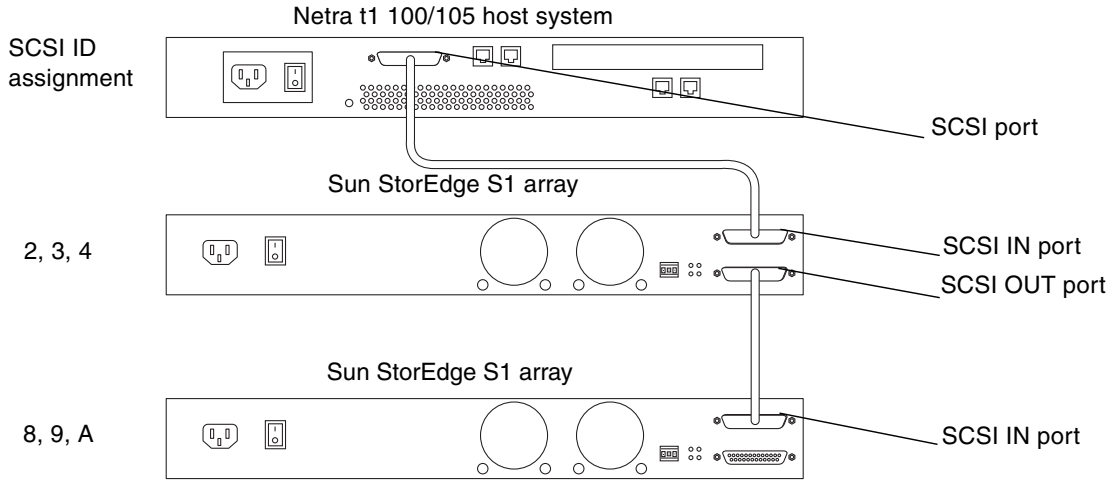


FIGURE 3-17 Two Sun StorEdge S1 Arrays on a Netra T1 Model 100/105 Server (Example)

TABLE 3-2 SCSI ID Assignments for Two Sun StorEdge S1 Arrays on a Netra T1 Model 100/105 Server

SCSI ID Addresses	Possible Use for ID Number	SCSI ID Addresses	Possible Use for ID Number
SCSI ID 0	Drive on host	SCSI ID 8	Drive 1 of second Sun StorEdge S1 array
SCSI ID 1	Drive on host	SCSI ID 9	Drive 2 of second Sun StorEdge S1 array
SCSI ID 2	Drive 1 of first Sun StorEdge S1 array	SCSI ID A	Drive 3 of second Sun StorEdge S1 array
SCSI ID 3	Drive 2 of first Sun StorEdge S1 array	SCSI ID B	
SCSI ID 4	Drive 3 of first Sun StorEdge S1 array	SCSI ID C	
SCSI ID 5		SCSI ID D	
SCSI ID 6	CD-ROM drive on host	SCSI ID E	
SCSI ID 7	SCSI controller ID		

Example: LVD SCSI Configuration

FIGURE 3-18 and TABLE 3-3 show an example of a host system with four Sun StorEdge S1 arrays connected to its on-board LVD SCSI port. This configuration has fewer limitations than the single-ended configuration in "Example: Single-Ended SCSI Configuration" on page 52:

- The maximum number of Sun StorEdge S1 arrays that can be used for this configuration is four, because the system supports LVD SCSI (which supports a longer maximum cable length) and no other peripherals are chained to this bus.
- SCSI ID 7 is used by the LVD SCSI controller.

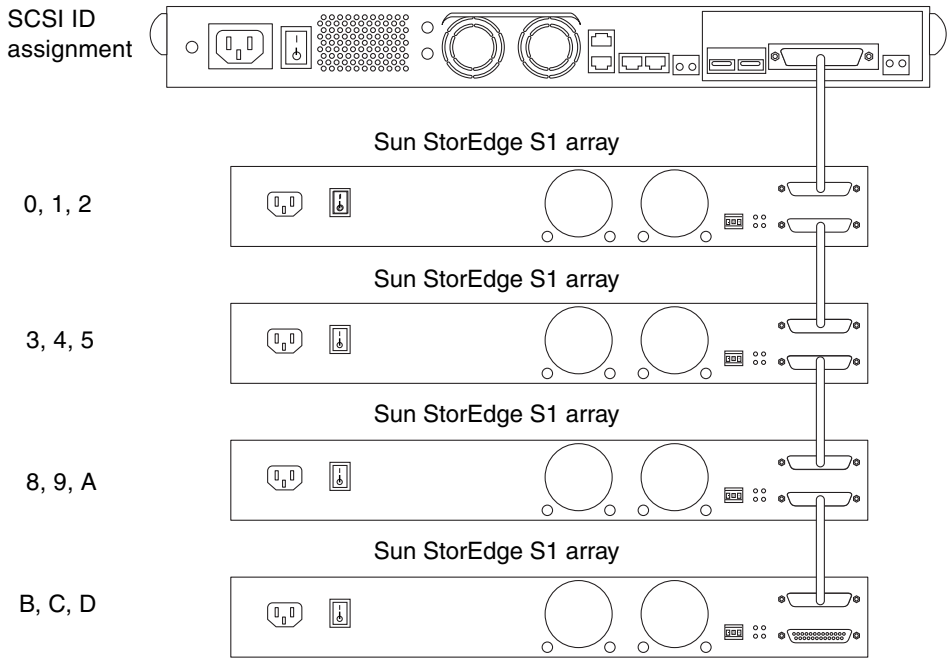


FIGURE 3-18 Four Sun StorEdge S1 Arrays on a Host System With LVD SCSI (Example)

TABLE 3-3 SCSI ID Assignments for Four Sun StorEdge S1 Arrays on a Host System With LVD SCSI

SCSI ID Addresses	Possible Use for ID Number	SCSI ID Addresses	Possible Use for ID Number
SCSI ID 0	Drive 1 of first Sun StorEdge S1 array	SCSI ID 8	Drive 1 of third Sun StorEdge S1 array
SCSI ID 1	Drive 2 of first Sun StorEdge S1 array	SCSI ID 9	Drive 2 of third Sun StorEdge S1 array
SCSI ID 2	Drive 3 of first Sun StorEdge S1 array	SCSI ID A	Drive 3 of third Sun StorEdge S1 array
SCSI ID 3	Drive 1 of second Sun StorEdge S1 array	SCSI ID B	Drive 1 of fourth Sun StorEdge S1 array
SCSI ID 4	Drive 2 of second Sun StorEdge S1 array	SCSI ID C	Drive 2 of fourth Sun StorEdge S1 array
SCSI ID 5	Drive 3 of second Sun StorEdge S1 array	SCSI ID D	Drive 3 of fourth Sun StorEdge S1 array
SCSI ID 6	CD-ROM drive on host (if available)	SCSI ID E	
SCSI ID 7	SCSI controller ID		

Example: Mixed Single-Ended and LVD SCSI Configuration

FIGURE 3-19 and TABLE 3-4 show an example of a host system with one single-ended Netra st D130 storage array and one Sun StorEdge S1 array connected to its LVD SCSI PCI adapter. This configuration has many limitations:

- The maximum number of Sun StorEdge S1 arrays that can be used for this configuration is one, because the Netra st D130 storage array is a single-ended peripheral. Only two peripherals can be connected to the bus.
- The Netra st D130 storage array is using SCSI IDs 2, 3, and 4, and SCSI ID 7 is being used by the default SCSI controller.
- The overall SCSI bus speed is limited.
- The maximum SCSI cable length is three meters, which applies when LVD and single-ended devices are on the same SCSI bus.

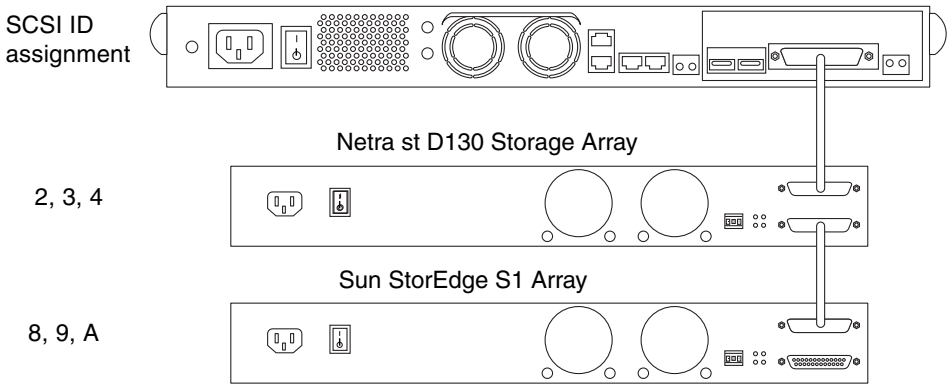


FIGURE 3-19 One Sun StorEdge S1 Array and One Netra st D130 Storage Array on a Host System With LVD SCSI (Example)

TABLE 3-4 SCSI ID Assignments for One Sun StorEdge S1 Array and One Single-ended Storage Array on a Host System With LVD SCSI

SCSI ID Addresses	Possible Use for ID Number	SCSI ID Addresses	Possible Use for ID Number
SCSI ID 0		SCSI ID 8	Drive 1 of Sun StorEdge S1 array
SCSI ID 1		SCSI ID 9	Drive 2 of Sun StorEdge S1 array
SCSI ID 2	Drive 1 of Netra st D130 storage array	SCSI ID A	Drive 3 of Sun StorEdge S1 array
SCSI ID 3	Drive 2 of Netra st D130 storage array	SCSI ID B	
SCSI ID 4	Drive 3 of Netra st D130 storage array	SCSI ID C	
SCSI ID 5		SCSI ID D	
SCSI ID 6		SCSI ID E	
SCSI ID 7	SCSI controller ID	SCSI ID F	

▼ To Determine the Drive Bay's SCSI ID Sequence and Base ID

1. **Determine which SCSI IDs are available.**

   a. **Exclude the default SCSI controller ID number 7, unless the controller ID has been modified from the default.**

   b. **Exclude any other SCSI IDs that may already be assigned by the host system.**

      Some host systems have dedicated SCSI devices on the system bus. For example, the Netra T1 model 100/105 servers not only reserve SCSI ID 7 for the SCSI controller, but also reserve SCSI IDs 0 and 1 for internal disks. Therefore, for a Sun StorEdge S1 array connected to one of the servers, you would not use these three reserved IDs. (The Netra T1 AC200 and Netra T1 DC200 servers have no such restrictions.)

   c. **Exclude the SCSI ID of any external SCSI device that is already connected to the SCSI bus.**

      If another array or an external tape drive is connected, see the product's documentation for which SCSI IDs are used.

   Refer to the *Solaris Handbook for Sun Peripherals* for more details about how to determine which SCSI target IDs are available for your system.

2. **Pick a base address for the SCSI ID sequence that you plan to assign to the drives.**

Note – Make sure that you do not assign any previously-assigned SCSI IDs from Step 1.

▼ To Set the SCSI IDs for the Drives

1. **At the back of the array, locate the SCSI ID switch (**FIGURE 3-20**).**

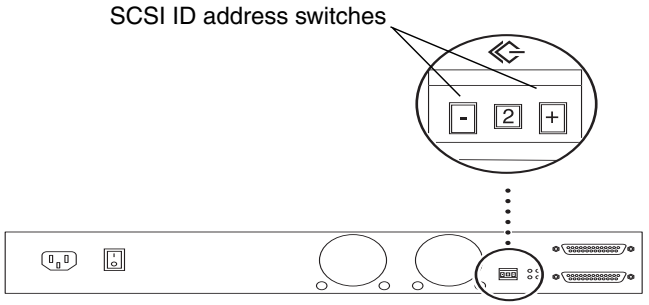


FIGURE 3-20 SCSI ID Switch on the Back of the Array (AC Version)

Pressing the right switch with a pointed object increments the address. Pressing the left switch decrements the address.

2. **Set the SCSI ID to the number of the base address (first address in the drive series).**

For example, to use SCSI ID addresses 2, 3, and 4 for the first Sun StorEdge S1 array, set the SCSI toggle switch to 2.

3. **If the power is On, cycle it Off then On again.**

This step is essential to transfer the updated data to the drives.

4. **Repeat Steps 2 and 3 for any additional Sun StorEdge S1 arrays that you may be installing.**

Note – To get the correct SCSI data, the host server must be powered on *after* any attached SCSI devices, such as the Sun StorEdge S1 array.

Connecting the SCSI Cables

This section contains instructions for connecting SCSI cables and power cables to the Sun StorEdge S1 array. The following restrictions apply:

- The overall SCSI bus length cannot exceed 12 meters for LVD SCSI or 3 meters for single-ended SCSI.

  Include the internal SCSI bus length for the array, which is 0.2 meter, when calculating the total SCSI bus length. If you are connecting another type of peripheral in a daisy chain, refer to the documentation that you received with that peripheral for its internal SCSI bus length. For an example procedure for LVD SCSI, see "To Cable Four Arrays in a Daisy Chain" on page 61.
- If you have an LVD SCSI connection, you cannot daisy chain more than four arrays together.
- If you have a single-ended SCSI connection, you cannot daisy chain more than two Sun StorEdge S1 arrays together.
- If you are adding a single-ended peripheral (such as the Netra st D130 storage array) to the SCSI chain, you can only daisy chain one Sun StorEdge S1 array along with the peripheral

Before connecting the SCSI cables from the host system to the Sun StorEdge S1 array, you must prepare the host system.

▼ To Prepare the Host System

Note – If the host system supports hot-swap attaching and detaching of external SCSI devices, do not power off the system. For example, Netra ct 400 and Netra ct 800 servers support hot-swapping of external SCSI devices, so you would not power off these system before starting. Start the host system preparation at Step 2.

---

1. **Halt operations and power off the host system.**

   Refer to the host system documentation for instructions on powering off the system.

2. **Install a host bus adapter into the host system, if necessary.**

   Refer to the documentation that shipped with the host bus adapter for installation instructions.

3. **Ensure that software documents (on the system CD) are available during the installation.**

▼ To Connect the SCSI Cables

1. **Verify that the host system has been powered off (if needed).**

   Refer to "To Prepare the Host System" on page 59.

2. **Connect the SCSI cable to the host system.**

   You can connect a cable to a host bus adapter or an on-board connector.

3. **Connect the other end of the SCSI cable to the SCSI IN port at the back of the array.**

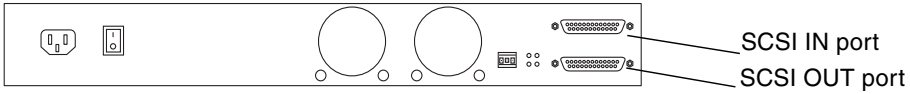


FIGURE 3-21 SCSI IN and OUT Ports on the Back of the Array (AC Version)

4. **Determine if this array is at the beginning or the end of the SCSI chain.**
   - If this array is at the *end* of the SCSI chain (you are not connecting any other peripherals to the host), go to "Connecting and Disconnecting Power Cables" on page 62.
   - If this array is at the *beginning* of the SCSI chain (if you are going to daisy chain other arrays or peripherals off of this one), go to Step 5.

5. **Connect one end of the SCSI cable to the SCSI OUT port of the first array.**

6. **Connect the other end of the SCSI cable to the SCSI IN port on the second array array or peripheral.**

7. **Repeat Step 5 and Step 6 until all arrays are attached to the daisy chain.**

8. **Determine if you need to install an external terminator at the end of the daisy chain.**
   - If the last device in the daisy chain is an array or some other type of *UltraSCSI* device, do not install an external terminator on the device. The on-board autoterminator in the device functions in UltraSCSI mode.
   - If the last device in the SCSI daisy chain is a *wide* SCSI device, install an external terminator on the SCSI OUT port on that device if it requires one.

     Refer to the documentation that came with the wide SCSI device to determine if the device needs an external terminator.

Note – Wide SCSI Devices use a 16- or 32-bit bus and transmit twice as much data as a narrow SCSI device.

- If the last device in the SCSI daisy chain is a *narrow* SCSI device, install an external terminator on the SCSI OUT port on that device (FIGURE 3-22).

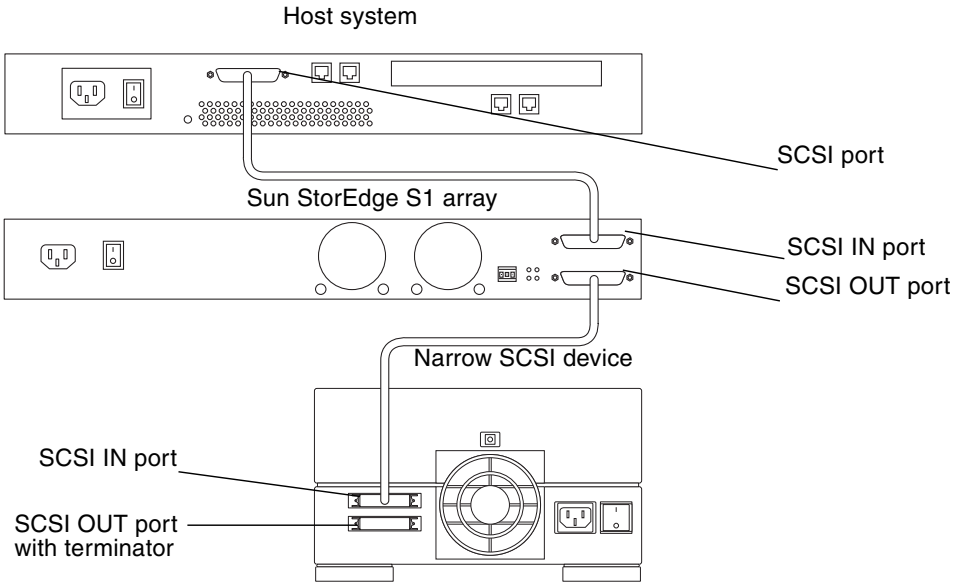


FIGURE 3-22 Daisy Chaining an Array With a Narrow SCSI Device

LVD SCSI Example: Cabling Four Arrays in a Daisy Chain

The following example shows which cables you would use to cable four arrays in a daisy chain without exceeding the 12 meter limit for LVD SCSI. See FIGURE 3-17 through FIGURE 3-19 starting on page 57 for some more examples of cabling configurations.

▼ To Cable Four Arrays in a Daisy Chain

1. **Connect the array to the host bus adapter using one 0.2 meter SCSI-3 to VHDCI cable.**
2. **Connect the four arrays using three 0.8 meter SCSI-3 to SCSI-3s cables.**

   TABLE 3-2 shows the part numbers for these cables.

Connecting and Disconnecting Power Cables

The procedures for connecting and disconnecting the power cable(s) vary depending on whether you have the AC or the DC version of the Sun StorEdge S1 array:

- "To Connect the AC Power Cable" on page 62
- "To Connect the DC Power Cables" on page 64

Note – See "Electrical Site Requirements" on page 97 for information on electrical site requirements.

Disconnecting the AC power cable is a simple matter of removing the cable from the power source and from the array.

See this procedure for how to disconnect the DC power cable:

- "To Disconnect the DC Power Cable from the DC Connector" on page 66

▼ To Connect the AC Power Cable

Caution – Ensure that the connection of multiple units to the supply circuit does not overload the supply overcurrent protection or supply wiring. Refer to the array's nameplate for its electrical ratings when determining the correct branch circuit rating for your installation.

---

1. **Connect the AC power cable to the AC power connector on the Sun StorEdge S1 array.**

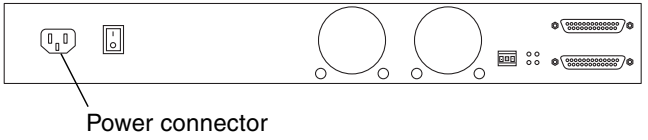


FIGURE 3-23 Power Connector for the AC Power Cable

2. **Connect the AC power cable to an AC power source.**

Note – As soon as the array is connected to a power source, it goes into Standby mode. The amber System Summary Fault LED comes on to reflect this; it does not indicate a fault.

▼ To Connect the DC Power Cables

1. **Get a DC grounding cable and two star washers.**
2. **Position and align the DC grounding cable against the two DC grounding lug nuts at the back of the array.**

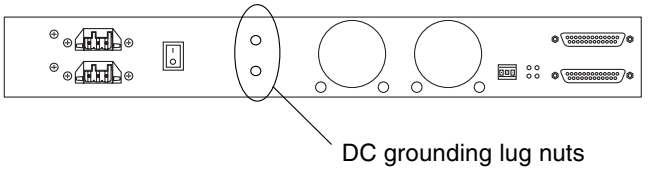


FIGURE 3-24 DC Grounding Lug Nuts for Connecting the DC Grounding Cable

3. **Place the star washers between the DC grounding cable and the two bolts to be used to secure one end of the grounding cable to the two lug nuts.**
4. **Tighten the two bolts to secure the grounding cable to the two lug nuts.**
5. **Secure the other end of the grounding cable to the earth ground in the building.**

   If you are installing the array in a rack, you can secure the grounding cable to a proper grounding point on the rack, as long as the rack is properly grounded to the earth ground in the building.
6. **Verify that the circuit breakers are Off on the circuits that supply power to the DC power source.**

Caution – Make sure the circuit breakers are Off before proceeding with the next step.

7. **Assemble the DC input power cables, if necessary, connecting them to two different power sources through the circuit breakers.**

   Refer to "Assembling the DC Input Power Cable (for DC Power Supplies)" on page 25 if you have not already assembled the DC input cables.

8. **Connect one DC input power cable to a DC connector at the back of the array.**

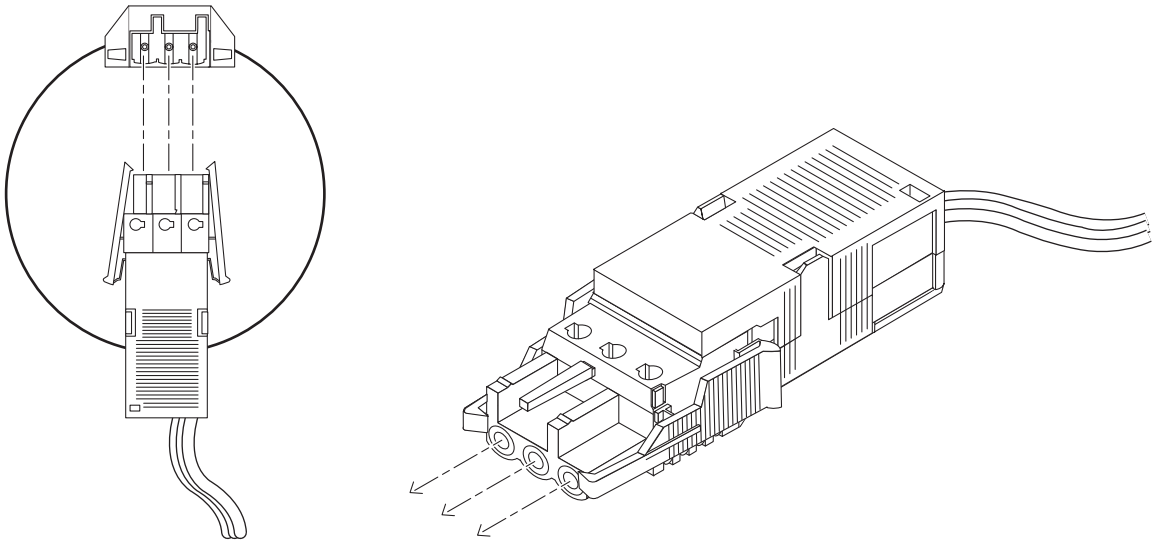


FIGURE 3-25 Connecting the DC Input Power Cable to a DC Connector

See FIGURE 3-26 for the locations of the DC connectors on the DC power supplies at the back of the array.

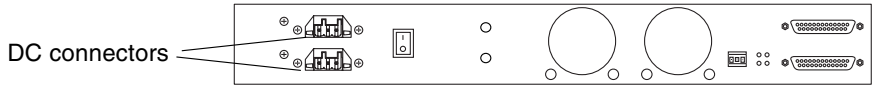


FIGURE 3-26 DC Connectors on the Left Back of the Array

9. **Repeat Step 8, connecting the second DC input power cable to the second DC connector at the back of the array.**
10. **Turn on the circuit breakers to provide power to the array.**

Note – As soon as the system is connected to a power source, it goes into Standby mode. The amber System Summary Fault LED comes on to reflect this; it does not indicate a fault.

▼ To Disconnect the DC Power Cable from the DC Connector

- **Squeeze the two tabs on the sides of the DC input power cable and gently disconnect the DC input power cable from the DC power supply (**FIGURE 3-27**).**

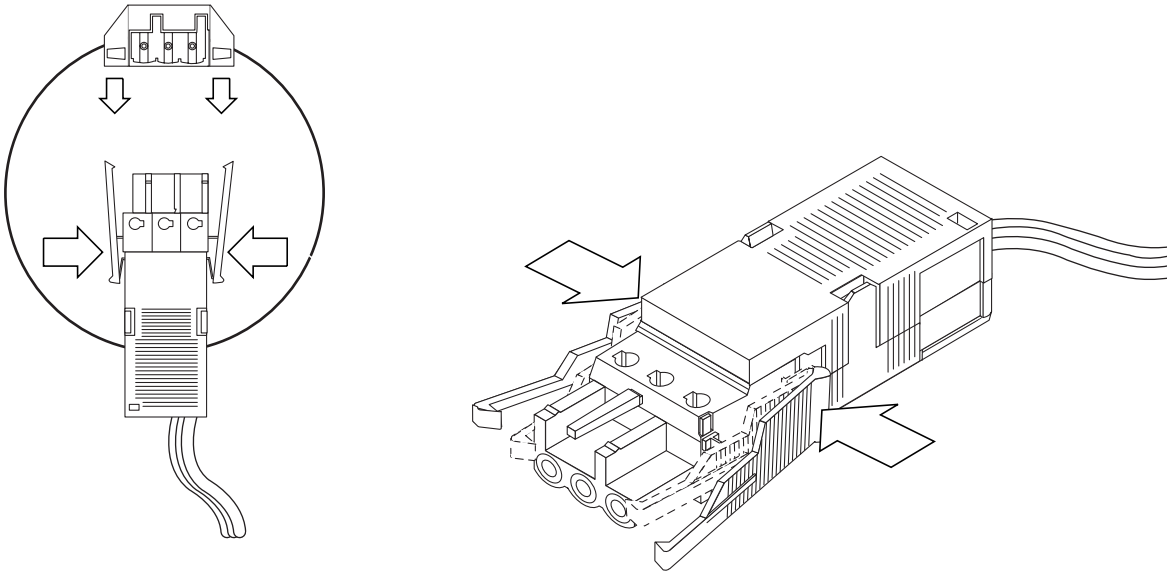


FIGURE 3-27 Disconnecting the DC Input Power Cable From the DC Connector

Isolating the Chassis Ground Connection (DC Version Only)

Every array is shipped from the factory with the chassis ground connected to the common output return through two screws on the power supply at the back of the array.

▼ To Isolate the Chassis Ground Connection

1. **Go to the back of the array and locate the two screws used to isolate the chassis ground connection.**

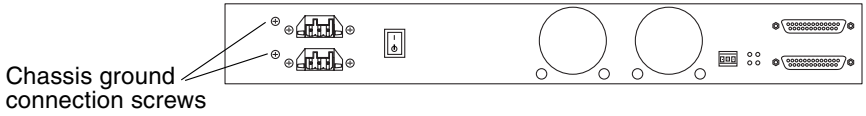


FIGURE 3-28 Locating the Chassis Ground Connection Screws

2. **Unscrew the two chassis ground connection screws.**

Note – Do not remove the two screws that hold the left side of the DC connectors in place. Remove the two screws further to the left of the DC connectors, which are raised slightly from the chassis.

---

3. **Locate the two chassis ground isolation bushings in the ship kit.**
4. **Insert the two bushings and screws into the screw holes and tighten the screws.**

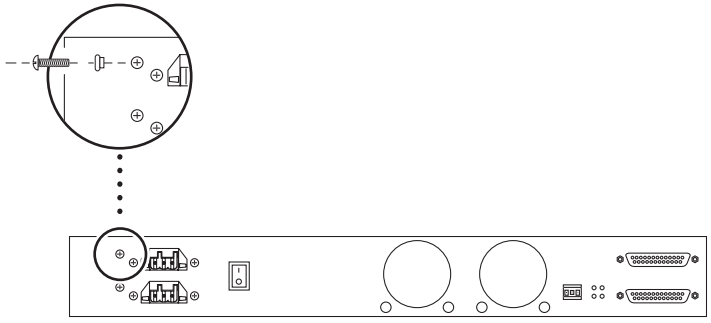


FIGURE 3-29 Securing the Chassis Ground Connection Screw

Powering On the Array

After all of the SCSI cables and power cables are attached to the Sun StorEdge S1 array, power on the array as described in the following procedure.

▼ To Power On the Array

1. **Before turning the array's power on, check the binary SCSI LED display with the power in standby mode.**

See “To Check the Binary SCSI ID LED Display” on page 86 for information on reading the binary LED display.

2. **Press the power switch at the back of the array to the On (|) position.**

   See FIGURE 3-21 for the location of the power switch. Note that when you release the power switch, it settles into the center (neutral) position, the power remains on, and the system summary fault LED on the front and back panels turns from amber to green.

3. **Check the LEDs to verify that the array is running properly.**

   See “Checking Front Panel LEDs” on page 83 and “Checking Back Panel LEDs” on page 88 for descriptions of the LED operations.

4. **Power on the host system.**

▼ To Power On the Host System

1. **Make sure that the Sun StorEdge S1 array and all other peripheral devices connected to the host system are powered on.**

2. **If you have powered off the host system, power on the host system.**

   Refer to the host system documentation for the correct instructions.

3. **Determine if the host system supports the hot-swap attachment of external SCSI devices.**

   For example, the Netra ct 400 and 800 servers support attaching SCSI devices in a hot-swap mode. Refer to your system documentation to see if your system supports hot swap.

   - If your system supports hot-swapping, follow the instructions in the system or SCSI adapter documentation for attaching external SCSI devices. See “To Hot-Swap a SCSI Device” on page 69 for an example procedure. Refer to the cfgadm(1M) and cfgadm_scsi(1M) man pages for additional information.
   - If your system does not support hot-swapping, follow the steps below to shut down and perform a reconfiguration boot on the host system.

   a. **As superuser, use the `shutdown` command to halt the host system.**

```
# shutdown -y -i0 -g0
```

b. At the `ok` prompt, use the `boot -r` command to perform a reconfiguration boot on the system.

If you do not use the **-r** argument, the system does not see the new device.

```
ok boot -r
```

4. Verify that the Sun StorEdge S1 array has successfully connected to the host system.

Refer to the host system documentation for specific instructions.

Hot-Swapping a SCSI Device

The following procedure uses example of hot-swapping a disk attached to controller 7.

▼ To Hot-Swap a SCSI Device

1. Enter the `cfgadm`(1M) command with the `-al` option to list all the SCSI devices on the controller.

The screen example shows the results of listing controller `c7`.

```
<sio@qame2-b>: cfgadm -al c7
Ap_Id                          Type         Receptacle   Occupant     Condition
c7                              scsi-bus     connected    configured   unknown
c7::dsk/c7t10d0                 disk         connected    configured   unknown
c7::dsk/c7t11d0                 disk         connected    configured   unknown
c7::dsk/c7t12d0                 disk         connected    configured   unknown
c7::dsk/c7t13d0                 disk         connected    configured   unknown
c7::dsk/c7t14d0                 disk         connected    configured   unknown
c7::dsk/c7t1d0                  disk         connected    configured   unknown
c7::dsk/c7t2d0                  disk         connected    configured   unknown
c7::dsk/c7t3d0                  disk         connected    configured   unknown
c7::dsk/c7t4d0                  disk         connected    configured   unknown
c7::dsk/c7t5d0                  disk         connected    configured   unknown
c7::dsk/c7t6d0                  disk         connected    configured   unknown
c7::dsk/c7t9d0                  disk         connected    configured   unknown
<sio@qame2-b>:
```

2. **Enter the `cfgadm`(1M) command with the `-x remove_device` option to remove the disk.**

   The screen example shows the removal of disk `c7::dsk/c7t13d0`.

```
<sio@qame2-b>: cfgadm -x remove_device c7::dsk/c7t13d0
Removing SCSI device:
/devices/ssm@0,0/pci@1d,600000/pci@1/scsi@2/sd@d,0
This operation will suspend activity on SCSI bus: c7
Continue (yes/no)? y
SCSI bus quiesced successfully.
It is now safe to proceed with hotplug operation.
Enter y if operation is complete or n to abort (yes/no)? y

** physically removed c7t13 **
```

3. **Enter the `cfgadm`(1M) command with the `-al` option again to show that the disk has been removed.**

   The screen example shows that `c7::dsk/c7t13d0` has been removed.

```
<sio@qame2-b>: cfgadm -al c7
Ap_Id                          Type         Receptacle   Occupant     Condition
c7                              scsi-bus     connected    configured   unknown
c7::dsk/c7t10d0                 disk         connected    configured   unknown
c7::dsk/c7t11d0                 disk         connected    configured   unknown
c7::dsk/c7t12d0                 disk         connected    configured   unknown
c7::dsk/c7t14d0                 disk         connected    configured   unknown
c7::dsk/c7t1d0                  disk         connected    configured   unknown
c7::dsk/c7t2d0                  disk         connected    configured   unknown
c7::dsk/c7t3d0                  disk         connected    configured   unknown
c7::dsk/c7t4d0                  disk         connected    configured   unknown
c7::dsk/c7t5d0                  disk         connected    configured   unknown
c7::dsk/c7t6d0                  disk         connected    configured   unknown
c7::dsk/c7t9d0                  disk         connected    configured   unknown
```

4. **Enter the `cfgadm` command with the `-x insert_device` option to prepare to insert a new disk into the slot.**

   After entering the command, enter `y` when prompted to `Continue (yes/no)?`, as shown in the following screen example.

```
** prepared to insert c7t13 back into S1 slot **
<sio@qame2-b>: cfgadm -x insert_device c7
Adding device to SCSI HBA:
/devices/ssm@0,0/pci@1d,600000/pci@1/scsi@2
This operation will suspend activity on SCSI bus: c7
Continue (yes/no)? y
SCSI bus quiesced successfully.
It is now safe to proceed with hotplug operation.
```

5. **If replacing a disk, insert the replacement disk.**

6. **Complete the operation.**

   Enter `y` when prompted as shown in the following screen example.

```
Enter y if operation is complete or n to abort (yes/no)? y
<sio@qame2-b>:
```

7. **Enter the `cfgadm`(1M) command with the `-al` option again to show that the disk has been added.**

```
<sio@qame2-b>: cfgadm -al c7
Ap_Id                          Type         Receptacle   Occupant     Condition
c7                              scsi-bus     connected    configured   unknown
c7::dsk/c7t10d0                 disk         connected    configured   unknown
c7::dsk/c7t11d0                 disk         connected    configured   unknown
c7::dsk/c7t12d0                 disk         connected    configured   unknown
c7::dsk/c7t13d0                 disk         connected    configured   unknown
c7::dsk/c7t14d0                 disk         connected    configured   unknown
c7::dsk/c7t1d0                  disk         connected    configured   unknown
c7::dsk/c7t2d0                  disk         connected    configured   unknown
c7::dsk/c7t3d0                  disk         connected    configured   unknown
c7::dsk/c7t4d0                  disk         connected    configured   unknown
c7::dsk/c7t5d0                  disk         connected    configured   unknown
c7::dsk/c7t6d0                  disk         connected    configured   unknown
c7::dsk/c7t9d0                  disk         connected    configured   unknown
```

CHAPTER 4

Adding, Removing, and Replacing Drives

This chapter gives hardware and software instructions for adding, removing, and replacing disk drives in an array.

This chapter is organized as follows:

- "Removing the Front Bezel to Access the Disk Drives" on page 74
- "Adding a Disk Drive" on page 74
- "Removing and Replacing a Disk Drive" on page 78

Removing the Front Bezel to Access the Disk Drives

Before you can add or remove disk drives, you must remove the bezel from the front of the system. See "To Remove the Bezel" on page 11.

Adding a Disk Drive

This section contains information on how to add a disk drive while the power is on and the operating system is running. This is called hot-swapping.

Caution – These procedures should be performed only by a qualified system administrator. Performing hot-swap operations on an active disk drive can result in data loss or corruption.

The way you add a disk drive depends on the software application you are using. According to the procedures required by each application, decide where to install the new disk drive, add the drive, and then reconfigure the operating environment.

The following tasks are always done:

1. Selecting a slot
2. Physically installing the disk drive
3. Configuring the Solaris operating environment to recognize the drive.
4. Configuring the application to accept the new disk drive.

Caution – Use the disposable antistatic wrist strap supplied with the system when you carry out the following procedures.

▼ To Add a Disk Drive

1. **Remove and untether the front bezel (see "To Remove the Bezel" on page 11, if needed).**
2. **Select any available slot in the array for the new disk drive.**

   Make a note of which slot you choose. You need this slot number when configuring the software environment.
3. **Remove the foam filler.**
4. **Store the foam filler in a safe place for future use. The foam filler acts as an air baffle and is needed for the system's internal cooling whenever a disk drive is absent from its slot.**
5. **Open the locking handle on the disk drive by sliding the latch in the direction marked on it (**FIGURE 4-1**).**

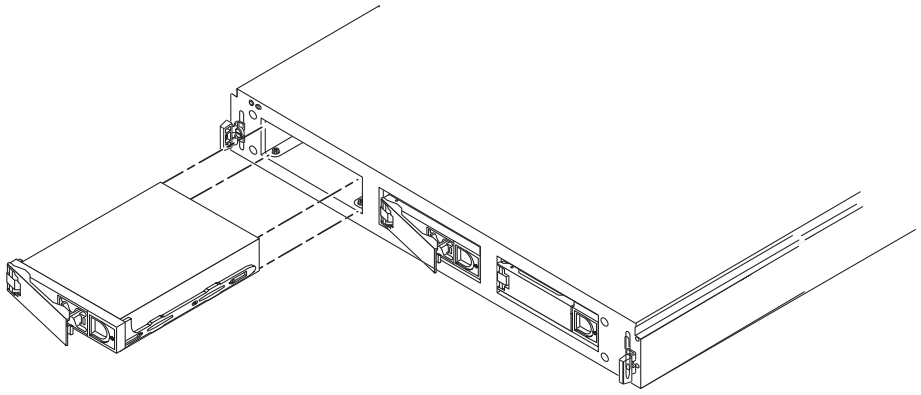


FIGURE 4-1 Adding a Disk Drive

6. **Slide the new drive into the vacant slot.**
7. **Apply equal pressure to both sides of the front of the drive, and firmly push it until the locking handle engages.**

   The drive should now be flush with the array's front.
8. **Close the locking handle fully.**

   When the drive is firmly installed, it spins up automatically.
9. **Determine the SCSI ID of the drive you added.**

   See "To Check the Binary SCSI ID LED Display" on page 86.
10. **Replace the front bezel.**

11. **Configure the software, as described in "Configuring the Software" on page 76.**

Configuring the Software

When adding a disk drive, you must create a new device entry for the drive in the `/devices`, `/dev/dsk`, and `/dev/rdsk` hierarchies. The new drive is assigned a unique name associated with the slot into which it was installed.

▼ To Create a New Solaris Device Entry

The naming convention for disks attached to a host bus adapter is `c`*w*`t`*x*`d`*y*`s`*z*, where:

w corresponds to the controller in your system
x corresponds to the SCSI target of the disk
y is the logical unit for the disk drive (always 0)
z is the slice (or partition) on the disk

For example, if the array is connected to a host bus adapter corresponding to controller `c2`, and a drive is added to the second slot in an array with the SCSI ID switch in the leftmost position (which assigns SCSI IDs 2, 3, and 4 to the drives inside the array), the new drive appears as `/dev/dsk/c2t3d0s[0-7]` and `/dev/rdsk/c2t3d0s[0-7]`.

1. **Login in as superuser.**
2. **Use the `drvconfig`(1M) and `disks`(1M) commands to add the new device.**

```
# drvconfig
# disks
```

3. **Verify that the new disk has been added.**

```
# ls -l /dev/dsk/c2t3d0s*
```

Where `c2t3d0s*` is the expected device name for the new drive in the third slot.

The new disk drive is now available for use as a block or character device. Refer to the `sd`(7) man pages for further details.

▼ To Configure a File System for a New Disk Drive

Caution – Only a qualified system administrator should perform these procedures. Performing hot-swap operations on an active disk drive can result in data loss or corruption.

Use the following procedure to configure a slice (single physical partition) on a disk to be used with a UNIX file system (UFS).

1. **Verify that the device label meets your requirements.**

   You can use the `prtvtoc` command to inspect the label for your disk. To modify the label, use the `format` command. Refer to the `prtvtoc`(1M) and `format`(1M) man pages for more information.

2. **Once you have selected a disk slice for your UFS file system, create a file system on the slice.**

   ```
   # newfs /dev/dsk/cwtxdysz
   ```

   Refer to the `newfs`(1M) man page for more information.

3. **If necessary, create a mount point for the new file system:**

   ```
   # mkdir mount-point
   ```

   Where *mount-point* is a fully qualified path name. Refer to the `mount`(1M) man page for more information.

4. **After the file system and mount point have been created, modify the `/etc/vfstab` file to reflect the new file system.**

   See the `vfstab(4)` man page for more details.

5. **Mount the new file system using the `mount` command:**

   ```
   # mount /dev/dsk/cwtxdyszmount-point
   ```

   Where *mount-point* is the directory you created.

   The file system is now ready to be used.

Removing and Replacing a Disk Drive

The array comes configured with 1-inch high drives. The procedures for removing and replacing the drives differ only in the software you use to control the disks. In all cases the disks are hot-swappable.

▼ To Remove a Disk Drive

Caution – If the array is running and a drive slot does not contain a disk drive or foam filler, the array cannot cool properly and might overheat. If you do not replace the drive, you *must* install a foam filler in the empty slot. The foam fillers are air baffles that allow the system to maintain maximum cooling. Verify that you have either a replacement drive or a foam filler before removing a disk drive from the array.

1. **Ensure there is no activity to the drives.**

   If the Disk Drive LED for that disk drive is flashing green, the drive is still active. When the Disk Drive LED is lit solid green, then the drive is no longer active and it is safe to remove it.

   Note – The LED might remain unlit for a long period if the disk drive is under an unusually heavy load. In this case, you must not remove the disk drive. However, if the LED is unlit because the disk drive has failed, then of course it is safe to remove the drive. You will know if the disk drive has failed, because a message informing you of the failure will appear on the console screen.

2. **Prepare the software environment to remove the drive.**

   See the documentation that came with your software for application-specific instructions that you might need to perform before you can remove the disk drive.

3. **Release the front bezel by pressing the latches on both ends and pulling the bezel away from the array.**

   See “Removing the Front Bezel” on page 11 if needed.

4. **Unlatch the drive bracket handle by sliding the latch in the direction indicated in** FIGURE 4-2**.**

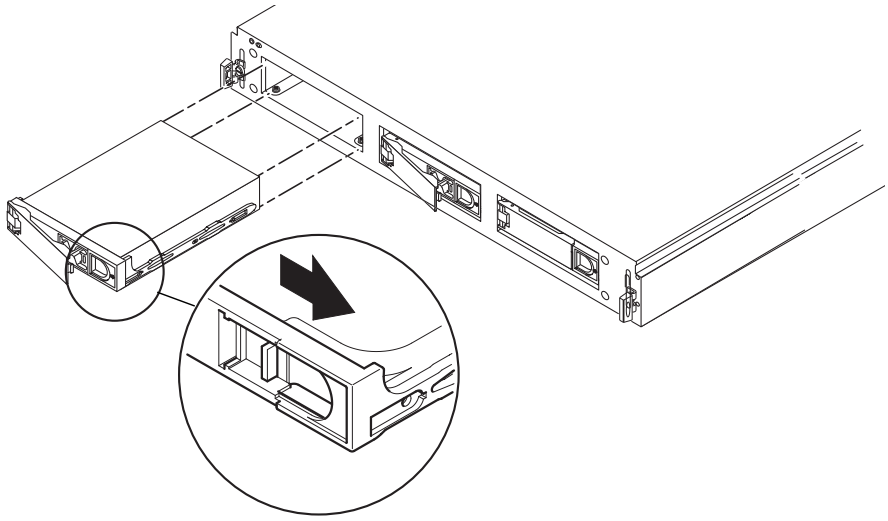


FIGURE 4-2 Removing and Replacing a Disk Drive

5. **Pull the bracket handle out and swing it open.**
6. **Continue to pivot the disk drive bracket handle against the chassis, applying mild pressure, until the drive disconnects.**
7. **Slide the drive out.**
8. **Determine whether you are going to replace the disk drive or not.**
   - If you are going to replace the disk drive, go to "To Replace a Disk Drive" on page 79.
   - If you are not going to replace the disk drive and you are going to continue using the system, insert a foam filler in the empty drive slot.
   - If you are not going to replace the disk drive and you are returning a defective array, leave the drive bays empty.

▼ To Replace a Disk Drive

1. **If necessary, refer to the documentation that came with your VERITAS Volume Manager or Solstice DiskSuite™ software for any procedures that you might have to perform before you can replace the disk drive.**
2. **Open the locking handle on the disk drive.**

   Push in the direction of the arrow to release the latch.
3. **Slide the replacement disk drive into the vacant slot.**

4. **Firmly push the drive until the locking handle engages and the drive is flush with the array's front.**
5. **Close the locking handle fully.**
6. **Replace the front bezel.**

CHAPTER 5

Maintenance Tasks

This chapter describes some of the maintenance tasks that you might need to perform periodically on the Sun StorEdge S1 array.

This appendix is organized as follows:

- "Powering Off the Array" on page 82
- "Troubleshooting" on page 83
- "Cleaning the Sun StorEdge S1 Array Screens" on page 91
- "Removing and Replacing an Array" on page 94

Powering Off the Array

Caution – Before turning off the host's system power, exit from the operating system. Failure to do so might cause data loss.

▼ To Power Off the Array

1. **If necessary, notify users that the host system is going to be shut down.**
2. **Back up system files and data, if necessary.**
3. **Halt the operating system.**
4. **Press the power system switch on the array to the standby position.**

Caution – Even with the power switch in the standby position, power remains connected to the array, and potentially dangerous voltage is present in the power supply. You must disconnect the power cable from the power source to completely remove power to the array.

5. **Verify that the System Power LED is off.**
6. **Disconnect the power cable from the power connector at the back of the array.**

Caution – Be very careful when disconnecting the DC input power cable from the DC connector; the DC connector is very sensitive and could be damaged if you disconnect the DC input power cable without fully squeezing the tabs at the sides of the DC input power cable.

Troubleshooting

Check the LED displays on the Sun StorEdge S1 array periodically to make sure that the array and disk drives are running properly.

Checking Front Panel LEDs

The front panel LEDs indicate system power, system faults, drive activity, and SCSI ID assignments. FIGURE 5-1 and FIGURE 5-2 show the location of the front panel LEDs and TABLE 5-1 shows their meanings and gives corrective actions. A quick reference card attached to the system also explains what the SCSI ID LEDs mean.

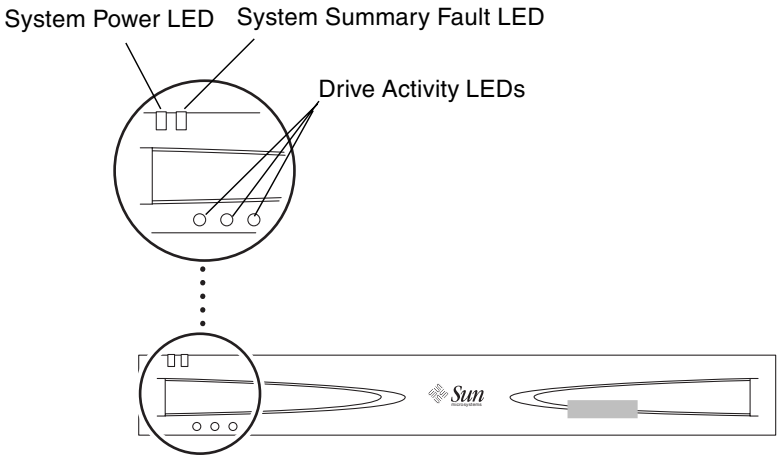


FIGURE 5-1 Front Panel LEDs With Bezel

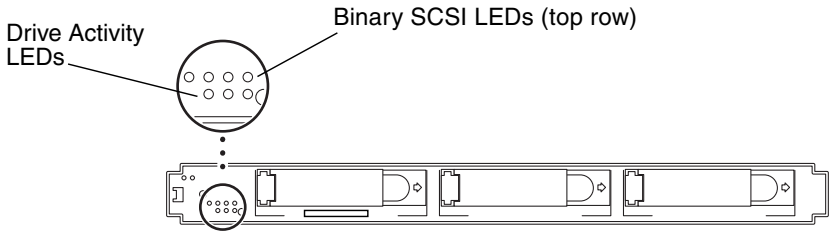


FIGURE 5-2 Front Panel LEDs With Bezel Removed

TABLE 5-1 Front Panel LEDs

LED	Color	Indication	Action
System Power	Green	The array is powered on.	No action is necessary.
	Unlit	The array is powered off.	No action is necessary.
System Summary Fault	Unlit	The array is performing normally.	No action is necessary.
System Summary Fault	Amber	There are two possible causes: • The power is in standby mode Or: • A component other than a drive has failed, such as the power supply or a fan. The System Summary Fault LED does not indicate if a drive has failed. The Drive Activity LEDs provide some diagnostic information on the disk drives.	Follow these steps: 1. Check to see if the power is in Standby mode. If so, turn on the power. See "Power Supply" on page 15. 2. If the power is on, it is a component failure. You must replace the entire array. Remove all disk drives before returning the array. See "Removing and Replacing a Disk Drive" on page 78. Contact your local Sun service representative for more details.
Disk Drive	Solid green	A drive is present in that slot but is not active.	No action is necessary.

TABLE 5-1 Front Panel LEDs *(Continued)*

LED	Color	Indication	Action
	Flashing green	A drive is present in that slot and is active.	No action is necessary.
	Unlit	No drive is present in that slot, or the disk drive has failed.	If the power is on, a drive is present in that slot, and the drive LED is unlit, then you must replace the drive. See "Removing and Replacing a Disk Drive" on page 78.
Binary SCSI LEDs	Solid green (in various combinations)	The position of the binary display indicates the base number (first number) of the three drive sequence. See the pull-out card or "To Check the Binary SCSI ID LED Display" on page 86.	No action is necessary.

Note – If a disk drive is under an unusually heavy load (for example, if the drive is being reformatted), the Disk Drive LED might be unlit for a long period of time, even though the drive has not failed. You should see a message in your console window telling you that the disk drive is offline if the disk drive has truly failed.

▼ To Check the Binary SCSI ID LED Display

Check the Binary SCSI LED display to confirm that the SCSI IDs are set correctly or to determine which SCSI IDs are assigned to which disk drives.

1. **Remove the front bezel by pressing the latches on both ends and pulling the bezel away from the array.**

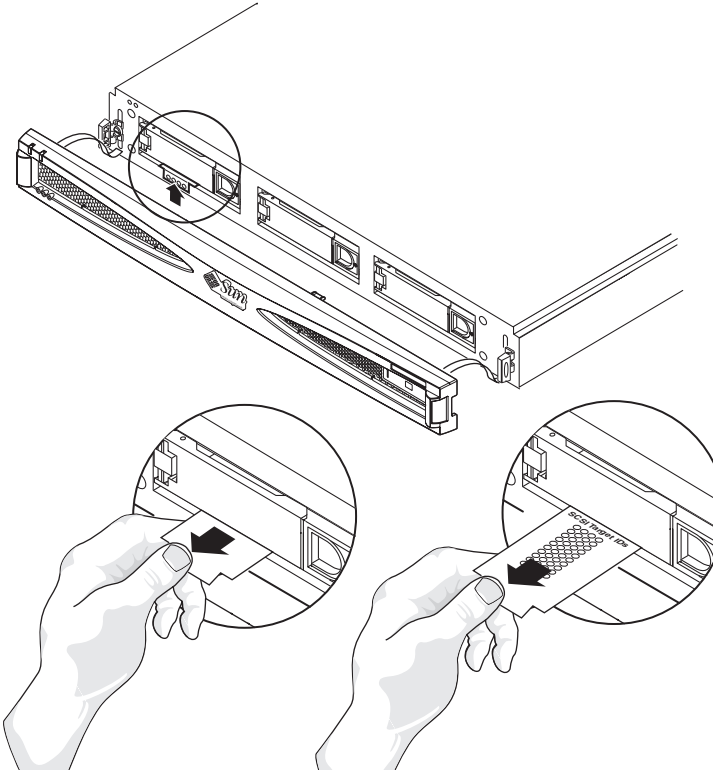


FIGURE 5-3 Checking the Binary SCSI LEDs

2. **Locate the Binary SCSI LEDs (**FIGURE 5-3**).**

3. **Use** TABLE 5-2 **or the pullout card attached to the system to determine which SCSI IDs are assigned to the drives in the array.**

   The disk drive SCSI ID numbers are assigned in sequences of three numbers in a row. Each customer chooses the numbers. The first number in the sequence is the base address. The installer sets the base address using the SCSI toggle switch on the back of the array. See "Setting the SCSI IDs for the Drives" on page 52 for more information on how to set the SCSI IDs.

   The base address is represented in binary format on the top row of disk drive LEDs on the front of the array.

Note – Rows 6-9 in the table represent SCSI ID sequences that cannot be used because SCSI ID 7 is assigned to the SCSI controller (unless the default is changed).

TABLE 5-2 Binary SCSI ID LEDs

Base SCSI Target ID	Back Hexadecimal SCSI ID Switch	Front Binary LED Display	SCSI Target IDs of Disk Drive Bays
0	0	❍❍❍❍	0, 1, 2
1	1	❍❍❍●	1, 2, 3
2	2	❍❍●❍	2, 3, 4
3	3	❍❍●●	3, 4, 5
4	4	❍●❍❍	4, 5, 6
5	5	❍●❍●	5, 6, 7
6	6	❍●●❍	6, 7, 8
7	7	❍●●●	7, 8, 9
8	8	●❍❍❍	8, 9, A
9	9	●❍❍●	9, A, B
10	A	●❍●❍	A, B, C
11	B	●❍●●	B, C, D
12	C	●●❍❍	C, D, E
13	D	●●❍●	D, E, F
14	E	●●●❍	E, F, 0
15	F	●●●●	F, 0, 1

Note – Some servers reserve SCSI ID 6 for use by CD drives and IDs 0 and 1 for internal drives. See "To Determine the Drive Bay's SCSI ID Sequence and Base ID" on page 57 for more information.

4. **Replace the front bezel.**

Checking Back Panel LEDs

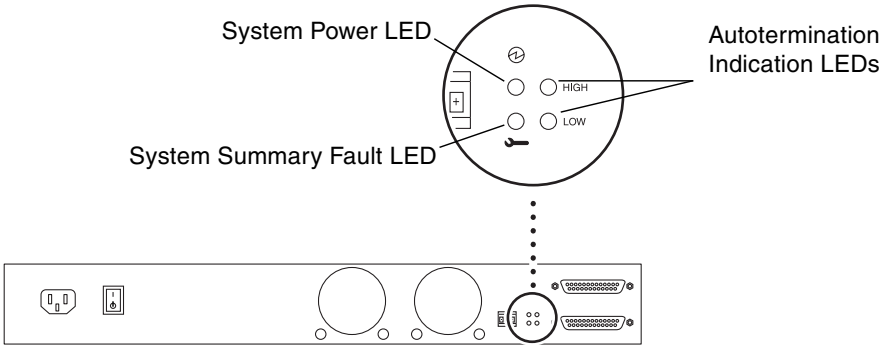


FIGURE 5-4 Back Panel LEDs

System Power and System Summary Fault LEDs

The System Power and System Summary Fault LEDs give the same diagnostic information as the System Power and System Summary Fault LEDs at the front of the array. Refer to TABLE 5-1 for more information.

Autotermination Indication LEDs

The Autotermination Indication LEDs indicate if the array is part of an UltraSCSI, wide SCSI, or narrow SCSI daisy chain. They also indicate the array's position in the daisy chain.

TABLE 5-3 Autotermination Indication LEDs

HIGH	LOW	Meaning
Off	Off	The array is the first device in the UltraSCSI or wide SCSI daisy chain; another device follows the Sun StorEdge S1 array.
On	On	The array is the last or only device in the UltraSCSI or wide SCSI daisy chain.
On	Off	A narrow SCSI device follows the array in the daisy chain.
Off	On	N/A

Note – UltraSCSI devices (such as the Sun StorEdge S1 array) at the end of a daisy chain do not require a terminator, but some wide SCSI devices at the end of a daisy chain do require a terminator. Refer to the documentation that came with your wide SCSI device to determine if it needs a terminator. Narrow SCSI devices at the end of a daisy chain always require a terminator.

FIGURE 5-5 shows two arrays connected in a daisy chain to a host system. Both HIGH and LOW autotermination LEDs are Off on the top array, which indicates that the array is the first device on the daisy chain and that another device follows it. On the next array, both HIGH and LOW autotermination LEDs are On, which indicates that the array is the last array in the daisy chain.

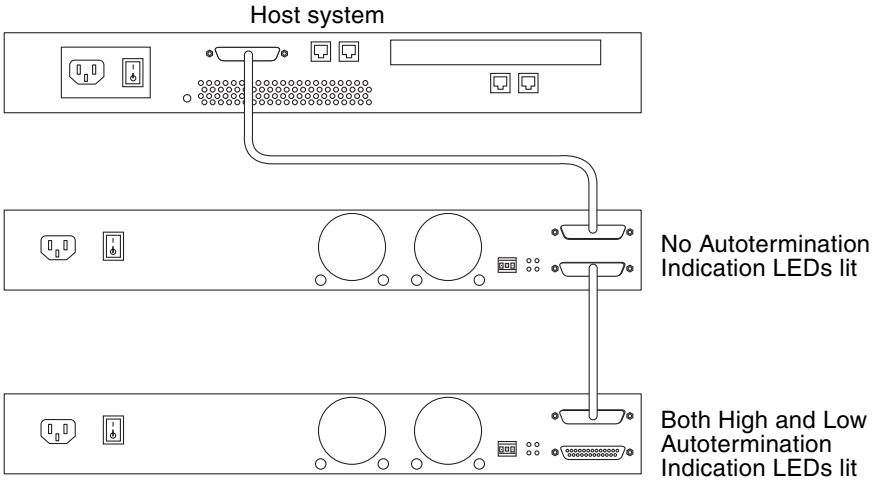


FIGURE 5-5 Autotermination Indication LEDs in an UltraSCSI or Wide SCSI Daisy Chain

FIGURE 5-6 shows an array and a narrow SCSI device daisy-chained to a server. The HIGH Autotermination LED is On and LOW is Off on the array, which indicates that a narrow SCSI device follows the array in the daisy chain.

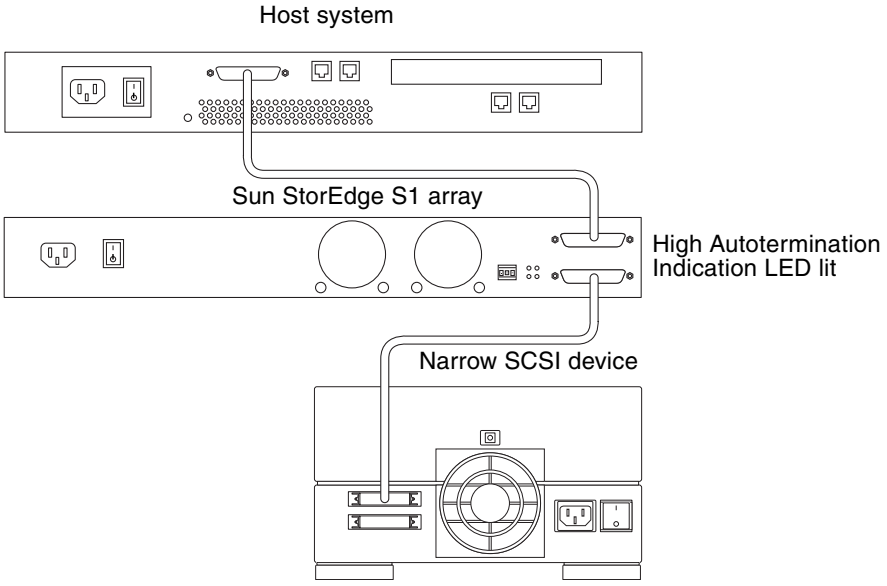


FIGURE 5-6 Autotermination Indication LEDs in a Narrow SCSI Daisy Chain

Cleaning the Sun StorEdge S1 Array Screens

To ensure optimum performance from your array, clean the screens at the front and back of the array periodically.

▼ To Clean the Front Bezel Screen

1. **Remove the front bezel.**

   See "Removing the Front Bezel" on page 11 if needed.

2. **Pull one of the tethers towards you until the head of the tether stops it from coming out of the hole in the chassis (**FIGURE 5-7**).**

FIGURE 5-7 Pulling a Tether Until It Stops

3. **Push the tether to one side so that its head comes partially out of the hole in the chassis (**FIGURE 5-8FIGURE 5-8**).**

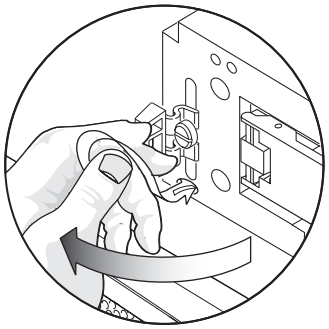


FIGURE 5-8 Pushing the Tether to One Side Until it Head Emerges

4. **Push the same tether in the opposite direction (**FIGURE 5-9**).**

FIGURE 5-9 Pushing the Tether in the Opposite Direction

5. **Pull the head of the tether entirely out of the chassis (**FIGURE 5-10**).**

FIGURE 5-10 Pulling the Head of the Tether out of the Array

6. **Repeat Step 2 through Step 5 for the tether at the other end of the bezel.**
7. **Use a vacuum cleaner to clean the dust from the screen at the back of the bezel.**

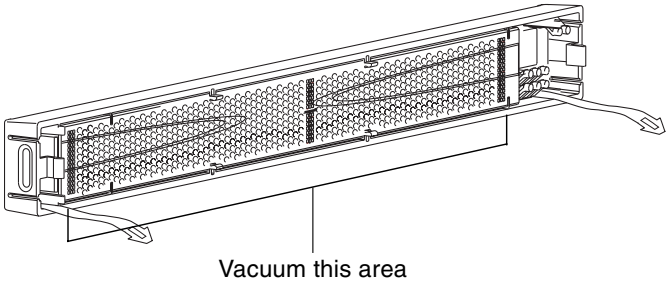


FIGURE 5-11 Cleaning the Front Bezel Screen

▼ To Reattach the Bezel's Tethers to the Array

1. **Position one of the tethers in front of its hole in the chassis and angle it so that half of its head enters the hole in the chassis.**

   You might need to push the tether's head in gently.
2. **With one half of the tether's head inside the hole in the chassis, change the angle so that you can gently push the head of the tether completely into its hole.**

   You might need to push the tether's head in gently.
3. **Repeat Step 1 and Step 2 for the tether at the other end of the bezel.**

▼ To Clean the Back Fan Screens

- **Go to the back of the array and use a vacuum cleaner to clean all the dust and debris from the fan screens.**

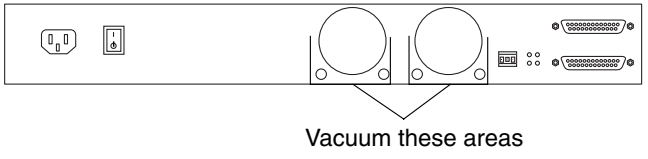


FIGURE 5-12 Cleaning the Back Fan Screens

Removing and Replacing an Array

These instructions are for removing a Sun StorEdge S1 array or another type of array and replacing it with a Sun StorEdge S1 array. If replacing any other array than the Sun StorEdge S1 array, refer to that array's documentation for additional information about how to remove that array.

Note – If your host system supports hot-swap attaching and detaching of external SCSI devices, do not power off your system. For example, if your host system is a Netra ct 400 or 800 or similar server, you should not power off the system. Start the removal of the server at Step 3.

---

1. **Make note of the SCSI ID addresses assigned to the drives in the array that you are going to remove.**
2. **Power off the host system, if necessary.**
3. **Power off the array.**

   See "To Power Off the Array" on page 82.
4. **Disconnect the SCSI and power cables for the array that you are going to remove.**
5. **Remove the drives from the array.**

   See "Removing and Replacing a Disk Drive" on page 78.
6. **Remove the array from the rack.**
7. **Install the new** Sun StorEdge S1 array**.**

   See Chapter 3.

APPENDIX **A**

System Specifications and Site Requirements

This appendix provides the following specifications for the array:

- "Physical Specifications" on page 96
- "Electrical Site Requirements" on page 97
- "Environmental Specifications" on page 100
- "Acoustic Emissions" on page 100

Physical Specifications

TABLE A-1 Physical Specifications

Measure	English	Metric
Width	17.17 in.	43.6 cm
Depth	18.58 in.	47.2 cm
Height	1.73 in. 1 rack unit (1RU)	4.4 cm
Weight, without disk drives	13 lbs	5.9 kg
Weight, fully loaded	18 lbs	8.16 kg

Electrical Site Requirements

AC Power Requirements

TABLE A-2 AC Power Requirements

Electrical Element	Requirement
Voltage	100 VAC to 240 VAC (nominal)
Frequency	47–63 Hz
Input current	< 2.0 amps @ 100 VAC (150 Watts)
Max. input surge current	• 20 amps peak on a cold start (after the AC power has dropped off for >60 seconds) or on a restart (after the AC power has been removed for 200 milliseconds or longer) • 100 amps peak on a warm start or a restart (after the AC power has been removed for <200 milliseconds but >20 milliseconds) The surge current decays to normal operating current in less than 200 milliseconds. The surge current's decaying peaks are for less than 3 milliseconds duration in each half cycle.

Overcurrent Protection Requirements

Note – Overcurrent protection devices must meet applicable national and local electrical safety codes and be approved for the intended application.

- Overcurrent protection devices must be provided as part of each host equipment rack.
- Circuit breakers are located between the AC source and the array.
- Circuit breakers must not trip when presented with inrush current of 100 amps lasting 5 ms.

Disconnecting the Power for Servicing

You can disconnect the power for servicing in any of the following ways:

- Disconnect the power cord from the connector on the AC power supply at the back of the array.
- Turn off the circuit breakers in the rack where the array is mounted.
- Disconnect the main connector from the AC power source.

Ensure that all methods of disconnecting the power remain accessible after installation.

Caution – External filtering and surge suppression devices might be required on the power feeds where branch circuit electromagnetic characteristics are unknown.

DC Source Power Requirements

TABLE A-3 DC Power Requirements

Electrical Element	Requirement
Voltage	-48 VDC
Input current	< 4.0 amps @ -40 VDC (150 W)
Max. input surge current	• 20 amps peak on a cold start (after the DC power has dropped off for >60 seconds) or on a restart (after the DC power has been removed for 200 milliseconds or longer) • 100 amps peak on a warm start or a restart (after the DC power has been removed for <200 milliseconds but >4.5 milliseconds.) The surge current decays to normal operating current in less than 200 milliseconds.

DC power must be:

- Electrically isolated from any AC source
- Reliably connected to earth (the battery room positive bus is connected to ground)
- Capable of providing up to 200 watts of continuous power per feed pair

Note – The DC version of the array must be installed in a *restricted access location*. According to the intent of the National Electrical Code, a restricted access location is an area intended for qualified or trained personnel only and has access controlled by some sort of locking mechanism, such as a key lock or an access card system.

Overcurrent Protection Requirements

Note – Overcurrent protection devices must meet applicable national and local electrical safety codes and be approved for the intended application.

- Overcurrent protection devices must be provided as part of each host equipment rack.
- Circuit breakers must be located between the DC power source and the array. You should use two 10-amp, double-pole, fast trip, DC-rated circuit breakers for each power supply.

DC Supply and Ground Conductor Requirements

- Copper is the only suitable conductor material.
- Power supply connections through the input connector: 12 AWG (between the array and the circuit breaker). There are three conductors:
  - -48V
  - Ground connection to the power supply
  - -48V Return
- System ground conductor: 6 AWG (to be connected to the chassis)
- Cable insulation rating: minimum of 75° C, low smoke fume (LSF), flame retardant
- Cable type to be one of the following:
  - UL style 1028 or other UL 1581(VW-1) compliant equivalent
  - IEEE 383 compliant
  - IEEE 1202-1991 compliant
- Branch circuit cable insulation color: according to applicable National Electrical Codes
- Grounding cable insulation color: green and yellow

Environmental Specifications

The Sun StorEdge S1 array is certified to Telcordia NEBS GR-63-CORE Level 3 (Earthquake Risk Zone 4).

TABLE A-4 Temperature Specifications

Status	Temperature Range
Operating	41˚F to 104˚F, (5˚C to 40˚C)
Short-term* operating[1]	23˚F to 131˚F, (-5˚C to 55˚C)
Nonoperating	-40˚F to 158˚F, (-40˚C to 70˚C)

1 See Note that follows the following table.

TABLE A-5 Humidity Specifications

Status	Relative Humidity (non-condensing) Range
Operating	5% to 85% (but not to exceed 0.024 kg water/kg of dry air)
Short-term* operating[1]	5% to 90% (but not to exceed 0.024 kg water/kg of dry air)
Nonoperating	90%

1 See the following Note.

Note – NEBS Level 3 criteria state that short-term operating conditions should be met for no more than 96 consecutive hours, for no more than 360 hours per year in total, and on no more than 15 separate occasions per year.

Acoustic Emissions

The Sun StorEdge S1 array emits less than 60 dBA (GR-63-CORE test method).

LVD SCSI Port Pin Descriptions

TABLE A-6 LVD SCSI Port Pin Descriptions

Signal Name	Connector Contact Number	Cable Conductor Number[1]	Cable Conductor Number	Connector Contact Number	Signal Name
+DB(12)	1	1	2	35	-DB(12)
+DB(13)	2	3	4	36	-DB(13)
+DB(14)	3	5	6	37	-DB(14)
+DB(15)	4	7	8	38	-DB(15)
+DB(P1)	5	9	10	39	-DB(P1)
+DB(0)	6	11	12	40	-DB(0)
+DB(1)	7	13	14	41	-DB(1)
+DB(2)	8	15	16	42	-DB(2)
+DB(3)	9	17	18	43	-DB(3)
+DB(4)	10	19	20	44	-DB(4)
+DB(5)	11	21	22	45	-DB(5)
+DB(6)	12	23	24	46	-DB(6)
+DB(7)	13	25	26	47	-DB(7)
+P_CRCA	14	27	28	48	-P_CRCA
GROUND	15	29	30	49	GROUND
DIFFSENS	16	31	32	50	GROUND
TERMPWR	17	33	34	51	TERMPWR
TERMPWR	18	35	36	52	TERMPWR
RESERVED	19	37	38	53	RESERVED
GROUND	20	39	40	54	GROUND
+ATN	21	41	42	55	-ATN
GROUND	22	43	44	56	GROUND
+BSY	23	45	46	57	-BSY
+ACK	24	47	48	58	-ACK
+RST	25	49	50	59	-RST

TABLE A-6 LVD SCSI Port Pin Descriptions *(Continued)*

Signal Name	Connector Contact Number	Cable Conductor Number[1]	Cable Conductor Number	Connector Contact Number	Signal Name
+MSG	26	51	52	60	-MSG
+SEL	27	53	54	61	-SEL
+C/D	28	55	56	62	-C/D
+REQ	29	57	58	63	-REQ
+I/O	30	59	60	64	-I/O
+DB(8)	31	61	62	65	-DB(8)
+DB(9)	32	63	64	66	-DB(9)
+DB(10)	33	65	66	67	-DB(10)
+DB(11)	34	67	68	68	-DB(11)

1 The conductor number refers to the conductor position when using flat-ribbon cable.

APPENDIX **B**

Declaration of Conformity, Regulatory Compliance, and Safety Statements

This appendix contains the following information that applies to the Sun StorEdge S1 array.

- "Declaration of Conformity" on page 104
- "Regulatory Compliance Statements" on page 105
- "Safety Agency Compliance Statements" on page 109

Review this information before attempting to install or use this array.

Declaration of Conformity

Compliance Model Number:	CYT2A and CYT2D
Product Family Name:	Sun StorEdge S1 Array

EMC

USA—FCC Class A

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This equipment may not cause harmful interference.
2. This equipment must accept any interference that may cause undesired operation.

European Union

This equipment complies with the following requirements of the EMC Directive 89/336/EEC:

EN55022:1998/CISPR22:1997	Class A
EN55024:1998 Required Limits (as applicable):	
EN61000-4-2	4 kV (Direct), 8kV (Air)
EN61000-4-3	3 V/m
EN61000-4-4	1 kV AC Power Lines, 0.5 kV Signal and DC Power Lines
EN61000-4-5	1 kV AC Line-Line and Outdoor Signal Lines, 2 kV AC Line-Gnd, 0.5 kV DC Power Lines
EN61000-4-6	3 V
EN61000-4-8	1 A/m
EN61000-4-11	Pass
EN61000-3-2:1995 + A1, A2, A14	Pass
EN61000-3-3:1995	Pass

Safety

This equipment complies with the following requirements of the Low Voltage Directive 73/23/EEC:

EC Type Examination Certificates:			
EN60950:2000, 3rd Edition	TÜV Rheinland Certificate No. xxxxxxxxxxxx		
IEC 60950:2000, 3rd Edition	CB Scheme Certificate No. xxxxxxxxxxxx		
Evaluated to all CB Countries			
UL 60950, 3rd Edition, CSA C22.2 No. 60950-00	File:	Vol.	Sec.
UL 60950, 3rd Edition, CSA C22.2 No. 950-00	File:	Vol.	Sec.

Supplementary Information

This product was tested and complies with all the requirements for the CE Mark.

/S/
Dennis P. Symanski DATE
Manager, Compliance Engineering
Sun Microsystems, Inc.
4150 Network Circle, MPK15-102
Santa Clara, CA 95054 U.S.A.
Tel: 650-786-3255
Fax: 650-786-3723

/S/
Pamela J. Dullaghan DATE
Quality Program Manager
Sun Microsystems Scotland, Limited
Springfield, Linlithgow
West Lothian, EH49 7LR
Scotland, United Kingdom
Tel: +44 1 506 672 395 Fax: +44 1 506 670 011

Regulatory Compliance Statements

Your Sun product is marked to indicate its compliance class:

- Federal Communications Commission (FCC) — USA
- Industry Canada Equipment Standard for Digital Equipment (ICES-003) — Canada
- Voluntary Control Council for Interference (VCCI) — Japan
- Bureau of Standards Metrology and Inspection (BSMI) — Taiwan

Please read the appropriate section that corresponds to the marking on your Sun product before attempting to install the product.fc

FCC Class A Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio

communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Modifications: Any modifications made to this device that are not approved by Sun Microsystems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

FCC Class B Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

Modifications: Any modifications made to this device that are not approved by Sun Microsystems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

ICES-003 Class A Notice - Avis NMB-003, Classe A

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

ICES-003 Class B Notice - Avis NMB-003, Classe B

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

VCCI 基準について

クラス A VCCI 基準について

クラス A VCCI の表示があるワークステーションおよびオプション製品は、クラス A 情報技術装置です。これらの製品には、下記の項目が該当します。

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

クラス B VCCI 基準について

クラス B VCCI の表示 があるワークステーションおよびオプション製品は、クラス B 情報技術装置です。これらの製品には、下記の項目が該当します。

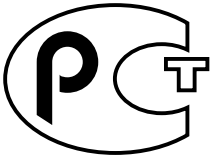
この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス B 情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。取扱説明書に従って正しい取り扱いをしてください。

BSMI Class A Notice

The following statement is applicable to products shipped to Taiwan and marked as Class A on the product compliance
label.

警告使用者：
這是甲類的資訊產品，在居住的環境中使用
時，可能會造成射頻 干擾，在這種情況下，
使用者 會被要求採取某些適當的對策。

GOST-R Certification Mark



Safety Agency Compliance Statements

Read this section before beginning any procedure. The following text provides safety precautions to follow when installing a Sun Microsystems product.

Safety Precautions

For your protection, observe the following safety precautions when setting up your equipment:

- Follow all cautions and instructions marked on the equipment.
- Ensure that the voltage and frequency of your power source match the voltage and frequency inscribed on the equipment's electrical rating label.
- Never push objects of any kind through openings in the equipment. Dangerous voltages may be present. Conductive foreign objects could produce a short circuit that could cause fire, electric shock, or damage to your equipment.

Symbols

The following symbols may appear in this book:

Caution – There is a risk of personal injury and equipment damage. Follow the instructions.

Caution – Hot surface. Avoid contact. Surfaces are hot and may cause personal injury if touched.

Caution – Hazardous voltages are present. To reduce the risk of electric shock and danger to personal health, follow the instructions.

Depending on the type of power switch your device has, one of the following symbols may be used:

On – Applies AC power to the system.

Off – Removes AC power from the system.

Standby – The On/Standby switch is in the standby position.

Modifications to Equipment

Do not make mechanical or electrical modifications to the equipment. Sun Microsystems is not responsible for regulatory compliance of a modified Sun product.

Placement of a Sun Product

Caution – Do not block or cover the openings of your Sun product. Never place a Sun product near a radiator or heat register. Failure to follow these guidelines can cause overheating and affect the reliability of your Sun product.

Noise Level

In compliance with the requirements defined in DIN 45635 Part 1000, the workplace-dependent noise level of this product is less than 70 db(A).

SELV Compliance

Safety status of I/O connections comply to SELV requirements.

Power Cord Connection

Caution – Sun products are designed to work with power systems having a grounded neutral (grounded return for DC-powered products). To reduce the risk of electric shock, do not plug Sun products into any other type of power system. Contact your facilities manager or a qualified electrician if you are not sure what type of power is supplied to your building.

Caution – Not all power cords have the same current ratings. Household extension cords do not have overload protection and are not meant for use with computer systems. Do not use household extension cords with your Sun product.

The following caution applies only to devices with a Standby power switch:

Caution – The power switch of this product functions as a standby type device only. The power cord serves as the primary disconnect device for the system. Be sure to plug the power cord into a grounded power outlet that is nearby the system and is readily accessible. Do not connect the power cord when the power supply has been removed from the system chassis.

The following caution applies only to devices with multiple power cords:

Caution – For products with multiple power cords, all power cords must be disconnected to completely remove power from the system.

Battery Warning

Caution – There is danger of explosion if batteries are mishandled or incorrectly replaced. On systems with replaceable batteries, replace only with the same manufacturer and type or equivalent type recommended by the manufacturer per the instructions provided in the product service manual. Do not disassemble batteries or attempt to recharge them outside the system. Do not dispose of batteries in fire. Dispose of batteries properly in accordance with the manufacturer's instructions and local regulations. Note that on Sun CPU boards, there is a lithium battery molded into the real-time clock. These batteries are not customer replaceable parts.

System Unit Cover

You must remove the cover of your Sun computer system unit to add cards, memory, or internal storage devices. Be sure to replace the cover before powering on your computer system.

Caution – Do not operate Sun products without the cover in place. Failure to take this precaution may result in personal injury and system damage.

Rack System Warning

The following warnings apply to Racks and Rack Mounted systems.

Caution – For safety, equipment should always be loaded from the bottom up. That is, install the equipment that will be mounted in the lowest part of the rack first, then the next higher systems, etc.

Caution – To prevent the rack from tipping during equipment installation, the anti-tilt bar on the rack must be deployed.

Caution – To prevent extreme operating temperature within the rack insure that the maximum temperature does not exceed the product's ambient rated temperatures.

Caution – To prevent extreme operating temperatures due to reduced airflow consideration should be made to the amount of air flow that is required for a safe operation of the equipment.

Laser Compliance Notice

Sun products that use laser technology comply with Class 1 laser requirements.

Class 1 Laser Product
Luokan 1 Laserlaite
Klasse 1 Laser Apparat
Laser Klasse 1

CD and DVD Devices

The following caution applies to CD, DVD, and other optical devices.

Caution – Use of controls, adjustments, or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

Conformité aux normes de sécurité

Veuillez lire attentivement cette section avant de commencer. Ce texte traite des mesures de sécurité qu'il convient de prendre pour l'installation d'un produit Sun Microsystems.

Mesures de sécurité

Pour votre sécurité, nous vous recommandons de suivre scrupuleusement les mesures de sécurité ci-dessous lorsque vous installez votre matériel:

- Suivez tous les avertissements et toutes les instructions inscrites sur le matériel.
- Assurez-vous que la tension et la fréquence de votre source d'alimentation correspondent à la tension et à la fréquence indiquées sur l'étiquette de la tension électrique nominale du matériel
- N'introduisez jamais d'objets quels qu'ils soient dans les ouvertures de l'équipement. Vous pourriez vous trouver en présence de hautes tensions dangereuses. Tout objet étranger conducteur risque de produire un court-circuit pouvant présenter un risque d'incendie ou de décharge électrique, ou susceptible d'endommager le matériel.

Symboles

Vous trouverez ci-dessous la signification des différents symboles utilisés:

Attention – ous risquez d'endommager le matériel ou de vous blesser. Veuillez suivre les instructions.

Attention – Surfaces brûlantes. Evitez tout contact. Les surfaces sont brûlantes. Vous risquez de vous blesser si vous les touchez.

Attention – Tensions dangereuses. Pour réduire les risques de décharge électrique et de danger physique, observez les consignes indiquées.

Selon le type d'interrupteur marche/arrêt dont votre appareil est équipé, l'un des symboles suivants sera utilisé:

Marche – Met le système sous tension alternative.

Arret – Met le système hors tension alternative.

Veilleuse – L'interrupteur Marche/Veille est sur la position de veille.

Modification du matériel

N'apportez aucune modification mécanique ou électrique au matériel. Sun Microsystems décline toute responsabilité quant à la non-conformité éventuelle d'un produit Sun modifié.

Positionnement d'un produit Sun

Attention – Evitez d'obstruer ou de recouvrir les orifices de votre produit Sun. N'installez jamais un produit Sun près d'un radiateur ou d'une source de chaleur. Si vous ne respectez pas ces consignes, votre produit Sun risque de surchauffer et son fonctionnement en sera altéré.

Niveau de pression acoustique

Le niveau de pression acoustique du lieu de travail définie par la norme DIN 45 635 Part 1000 doit être au maximum de 70 db(A).

Conformité SELV

Le niveau de sécurité des connexions E/S est conforme aux normes SELV.

Connexion du cordon d’alimentation

Attention – Les produits Sun sont conçus pour fonctionner avec des systèmes d'alimentation équipés d'un conducteur neutre relié à la terre (conducteur neutre pour produits alimentés en CC). Pour réduire les risques de décharge électrique, ne branchez jamais les produits Sun sur une source d'alimentation d'un autre type. Contactez le gérant de votre bâtiment ou un électricien agréé si vous avez le moindre doute quant au type d'alimentation fourni dans votre bâtiment.

Attention – Tous les cordons d'alimentation ne présentent pas les mêmes caractéristiques électriques. Les cordons d'alimentation à usage domestique ne sont pas protégés contre les surtensions et ne sont pas conçus pour être utilisés avec des ordinateurs. N'utilisez jamais de cordon d'alimentation à usage domestique avec les produits Sun.

L'avertissement suivant s'applique uniquement aux systèmes équipés d'un interrupteur Veille:

Attention – L'interrupteur d'alimentation de ce produit fonctionne uniquement comme un dispositif de mise en veille. Le cordon d'alimentation constitue le moyen principal de déconnexion de l'alimentation pour le système. Assurez-vous de le brancher dans une prise d'alimentation mise à la terre près du système et facile d'accès. Ne le branchez pas lorsque l'alimentation électrique ne se trouve pas dans le châssis du système.

L'avertissement suivant s'applique uniquement aux systèmes équipés de plusieurs cordons d'alimentation:

Attention – Pour mettre un système équipé de plusieurs cordons d'alimentation hors tension, il est nécessaire de débrancher tous les cordons d'alimentation.

Mise en garde relative aux batteries

Attention – Les batteries risquent d’exploser en cas de manipulation maladroite ou de remplacement incorrect. Pour les systèmes dont les batteries sont remplaçables, effectuez les remplacements uniquement selon le modèle du fabricant ou un modèle équivalent recommandé par le fabricant, conformément aux instructions fournies dans le manuel de service du système. N’essayez en aucun cas de démonter les batteries, ni de les recharger hors du système. Ne les jetez pas au feu. Mettez-les au rebut selon les instructions du fabricant et conformément à la législation locale en vigueur. Notez que sur les cartes processeur de Sun, une batterie au lithium a été moulée dans l'horloge temps réel. Les batteries ne sont pas des pièces remplaçables par le client.

Couvercle de l'unité

Pour ajouter des cartes, de la mémoire ou des périphériques de stockage internes, vous devez retirer le couvercle de votre système Sun. Remettez le couvercle supérieur en place avant de mettre votre système sous tension.

Attention – Ne mettez jamais des produits Sun sous tension si leur couvercle supérieur n'est pas mis en place. Si vous ne prenez pas ces précautions, vous risquez de vous blesser ou d'endommager le système.

Mise en garde relative au système en rack

La mise en garde suivante s'applique aux racks et aux systèmes montés en rack.

Attention – Pour des raisons de sécurité, le matériel doit toujours être chargé du bas vers le haut. En d'autres termes, vous devez installer, en premier, le matériel qui doit se trouver dans la partie la plus inférieure du rack, puis installer le matériel sur le niveau suivant, etc.

Attention – Afin d'éviter que le rack ne penche pendant l'installation du matériel, tirez la barre anti-basculement du rack.

Attention – Pour éviter des températures de fonctionnement extrêmes dans le rack, assurez-vous que la température maximale ne dépasse pas la fourchette de températures ambiantes du produit déterminée par le fabricant.

Attention – Afin d'empêcher des températures de fonctionnement extrêmes provoquées par une aération insuffisante, assurez-vous de fournir une aération appropriée pour un fonctionnement du matériel en toute sécurité

Avis de conformité des appareils laser

Les produits Sun qui font appel aux technologies lasers sont conformes aux normes de la classe 1 en la matière.

Class 1 Laser Product
Luokan 1 Laserlaite
Klasse 1 Laser Apparat
Laser Klasse 1

Périphériques CD et DVD

L'avertissement suivant s'applique aux périphériques CD, DVD et autres périphériques optiques:

Attention – L'utilisation de contrôles et de réglages ou l'application de procédures autres que ceux spécifiés dans le présent document peuvent entraîner une exposition à des radiations dangereuses.

Einhaltung sicherheitsbehördlicher Vorschriften

Lesen Sie vor dem Ausführen von Arbeiten diesen Abschnitt. Im folgenden Text werden Sicherheitsvor-kehrungen beschrieben, die Sie bei der Installation eines Sun Microsystems-Produkts beachten müssen.

Sicherheitsvorkehrungen

Treffen Sie zu Ihrem eigenen Schutz bei der Installation des Geräts die folgenden Sicherheitsvorkehrungen:

- Beachten Sie alle auf den Geräten angebrachten Warnhinweise und Anweisungen.
- Stellen Sie sicher, dass Spannung und Frequenz der Stromversorgung den Nennleistungen auf dem am Gerät angebrachten Etikett entsprechen.
- Führen Sie niemals Fremdobjekte in die Öffnungen am Gerät ein. Es können gefährliche Spannungen anliegen. Leitfähige Fremdobjekte können einen Kurzschluss verursachen, der einen Brand, Strom-schlag oder Geräteschaden herbeiführen kann.

Symbole

Die Symbole in diesem Handbuch haben folgende Bedeutung:

Achtung – Gefahr von Verletzung und Geräteschaden. Befolgen Sie die Anwei-sungen.

Achtung – Heiße Oberfläche. Nicht berühren, da Verletzungsgefahr durch heiße Oberfläche besteht.

Achtung – Gefährliche Spannungen. Befolgen Sie die Anweisungen, um Stromschläge und Verletzungen zu vermeiden.

Je nach Netzschaltertyp an Ihrem Gerät kann eines der folgenden Symbole verwendet werden:

Ein – Versorgt das System mit Wechselstrom.

Aus– Unterbricht die Wechselstromzufuhr zum Gerät.

Wartezustand – Der Ein-/Standby-Netz-schalter befindet sich in der Standby-Position.

Modifikationen des Geräts

Nehmen Sie keine elektrischen oder mechanischen Gerätemodifikationen vor. Sun Microsystems ist für die Einhaltung der Sicherheitsvorschriften von modifizierten Sun-Produkten nicht haftbar.

Aufstellung von Sun-Geräten

Achtung – Geräteöffnungen Ihres Sun-Produkts dürfen nicht blockiert oder abgedeckt werden. Sun-Geräte sollten niemals in der Nähe von Heizkörpern oder Heißluft-klappen aufgestellt werden. Die Nichtbeach-tung dieser Richtlinien kann Überhitzung verursachen und die Zuverlässigkeit Ihres Sun-Geräts beeinträchtigen.

Lautstärke

Gemäß den in DIN 45 635 Teil 1000 definierten Vorschriften beträgt die arbeitsplatzbedingte Lautstärke dieses Produkts weniger als 70 dB(A).

SELV-Konformität

Der Sicherheitsstatus der E/A-Verbindungen entspricht den SELV-Anforderungen.

Anschluss des Netzkabels

Achtung – Sun-Geräte sind für Stromversorgungssysteme mit einem geerdeten neutralen Leiter (geerdeter Rückleiter bei gleichstrombetriebenen Geräten) ausgelegt. Um die Gefahr von Stromschlägen zu vermeiden, schließen Sie das Gerät niemals an andere Stromversor-gungssysteme an. Wenden Sie sich an den zuständigen Gebäudeverwalter oder an einen qualifizierten Elektriker, wenn Sie nicht sicher wissen, an welche Art von Stromversor-gungssystem Ihr Gebäude angeschlossen ist.

Achtung – Nicht alle Netzkabel verfügen über die gleichen Nennwerte. Herkömmliche, im Haushalt verwendete Verlängerungskabel besitzen keinen Überlastschutz und sind daher für Computersysteme nicht geeignet. Verwenden Sie bei Ihrem Sun-Produkt keine Haushalts-Verlängerungskabel.

Die folgende Warnung gilt nur für Geräte mit Standby-Netzschalter:

Achtung – Beim Netzschalter dieses Geräts handelt es sich nur um einen Ein/Standby-Schalter. Zum völligen Abtrennen des Systems von der Stromversorgung dient hauptsächlich das Netzkabel. Stellen Sie sicher, dass das Netzkabel an eine frei zugängliche geerdete Steckdose in der Nähe des Systems ange-schlossen ist. Schließen Sie das Stromkabel nicht an, wenn die Stromversorgung vom Systemchassis entfernt wurde.

Die folgende Warnung gilt nur für Geräte mit mehreren Netzkabeln:

Achtung – Bei Produkten mit mehreren Netz-kabeln müssen alle Netzkabel abgetrennt wer-den, um das System völlig von der Stromver-sorgung zu trennen.

Warnung bezüglich Batterien

Achtung – Bei unsachgemäßer Handhabung oder nicht fachgerechtem Austausch der Batterien besteht Explosionsgefahr. Verwen-den Sie bei Systemen mit austauschbaren Batterien ausschließlich Ersatzbatterien desselben Typs und Herstellers bzw. einen entsprechenden, vom Hersteller gemäß den Anweisungen im Service-Handbuch des Produkts empfohlenen Batterietyp. Versuchen Sie nicht, die Batterien auszubauen oder außerhalb des Systems wiederaufzuladen. Werfen Sie die Batterien nicht ins Feuer. Entsorgen Sie die Batterien entsprechend den Anweisungen des Herstellers und den vor Ort geltenden Vorschriften. CPU-Karten von Sun verfügen über eine Echtzeituhr mit integrier-ter Lithiumbatterie. Diese Batterie darf nur von einem qualifizierten Servicetechniker aus-gewechselt werden.

Gehäuseabdeckung

Sie müssen die Abdeckung Ihres Sun-Computersystems entfernen, um Karten, Speicher oder interne Speichergeräte hinzuzufügen. Bringen Sie vor dem Einschalten des Systems die Gehäuseabdeckung wieder an.

Achtung – Nehmen Sie Sun-Geräte nicht ohne Abdeckung in Betrieb. Die Nichtbeachtung dieses Warnhinweises kann Verletzungen oder Geräteschaden zur Folge haben.

Warnungen bezüglich in Racks eingebauter Systeme

Die folgenden Warnungen gelten für Racks und in Racks eingebaute Systeme:

Achtung – Aus Sicherheitsgründen sollten sämtliche Geräte von unten nach oben in Racks eingebaut werden. Installieren Sie also zuerst die Geräte, die an der untersten Position im Rack eingebaut werden, gefolgt von den Systemen, die an nächsthöherer Stelle eingebaut werden, usw.

Achtung – Verwenden Sie beim Einbau den Kippschutz am Rack, um ein Umkippen zu vermeiden.

Achtung – Um extreme Betriebstemperaturen im Rack zu vermeiden, stellen Sie sicher, dass die Maximaltemperatur die Nennleistung der Umgebungstemperatur für das Produkt nicht überschreitet

Achtung – Um extreme Betriebstemperaturen durch verringerte Luftzirkulation zu vermei-den, sollte die für den sicheren Betrieb des Geräts erforderliche Luftzirkulation eingesetzt werden.

Hinweis zur Laser-Konformität

Sun-Produkte, die die Laser-Technologie verwenden, entsprechen den Laser-Anforderungen der Klasse 1.

Class 1 Laser Product
Luokan 1 Laserlaite
Klasse 1 Laser Apparat
Laser Klasse 1

CD- und DVD-Geräte

Die folgende Warnung gilt für CD-, DVD- und andere optische Geräte:

Achtung – Die hier nicht aufgeführte Verwendung von Steuerelementen, Anpassungen oder Ausführung von Vorgängen kann eine gefährliche Strahlenbelastung verursachen.

Normativas de seguridad

Lea esta sección antes de realizar cualquier operación. En ella se explican las medidas de seguridad que debe tomar al instalar un producto de Sun Microsystems.

Medidas de seguridad

Para su protección, tome las medidas de seguridad siguientes durante la instalación del equipo:

- Siga todos los avisos e instrucciones indicados en el equipo.
- Asegúrese de que el voltaje y frecuencia de la fuente de alimentación coincidan con el voltaje y frecuencia indicados en la etiqueta de clasificación eléctrica del equipo.
- No introduzca objetos de ningún tipo por las rejillas del equipo, ya que puede quedar expuesto a voltajes peligrosos. Los objetos conductores extraños pueden producir cortocircuitos y, en consecuencia, incendios, descargas eléctricas o daños en el equipo.

Símbolos

En este documento aparecen los siguientes símbolos:

Precaución – Existe el riesgo de que se produzcan lesiones personales y daños en el equipo. Siga las instrucciones.

Precaución – Superficie caliente. Evite todo contacto. Las superficies están calientes y pueden causar lesiones personales si se tocan.

Precaución – Voltaje peligroso. Para reducir el riesgo de descargas eléctricas y lesiones personales, siga las instrucciones.

En función del tipo de interruptor de alimentación del que disponga el dispositivo, se utilizará uno de los símbolos siguientes:

Encendido – Suministra alimentación de CA al sistema.

Apagado – Corta la alimentación de CA del sistema.

Espera – El interruptor de encendido/espera está en la posición de espera.

Modificaciones en el equipo

No realice modificaciones de tipo mecánico ni eléctrico en el equipo. Sun Microsystems no se hace responsable del cumplimiento de normativas en caso de que un producto Sun se haya modificado.

Colocación de un producto Sun

Precaución – No obstruya ni tape las rejillas del producto Sun. Nunca coloque un producto Sun cerca de radiadores ni fuentes de calor. Si no sigue estas indicaciones, el producto Sun podría sobrecalentarse y la fiabilidad de su funcionamiento se vería afectada.

Nivel de ruido

De conformidad con los requisitos establecidos en el apartado 1000 de la norma DIN 45635, el nivel de ruido en el lugar de trabajo producido por este producto es menor de 70 db(A).

Cumplimiento de la normativa para instalaciones SELV

Las condiciones de seguridad de las conexiones de entrada y salida cumplen los requisitos para instalaciones SELV (del inglés *Safe Extra Low Voltage*, voltaje bajo y seguro).

Conexión del cable de alimentación

Precaución – Los productos Sun se han diseñado para funcionar con sistemas de alimentación que cuenten con un conductor neutro a tierra (con conexión a tierra de regreso para los productos con alimentación de CC). Para reducir el riesgo de descargas eléctricas, no conecte ningún producto Sun a otro tipo de sistema de alimentación. Póngase en contacto con el encargado de las instalaciones de su empresa o con un electricista cualificado en caso de que no esté seguro del tipo de alimentación del que se dispone en el edificio.

Precaución – No todos los cables de alimentación tienen la misma clasificación eléctrica. Los alargadores de uso doméstico no cuentan con protección frente a sobrecargas y no están diseñados para su utilización con sistemas informáticos. No utilice alargadores de uso doméstico con el producto Sun.

La siguiente medida solamente se aplica a aquellos dispositivos que dispongan de un interruptor de alimentación de espera:

Precaución – El interruptor de alimentación de este producto funciona solamente como un dispositivo de espera. El cable de alimentación hace las veces de dispositivo de desconexión principal del sistema. Asegúrese de que conecta el cable de alimentación a una toma de tierra situada cerca del sistema y de fácil acceso. No conecte el cable de alimentación si la unidad de alimentación no se encuentra en el bastidor del sistema.

La siguiente medida solamente se aplica a aquellos dispositivos que dispongan de varios cables de alimentación:

Precaución – En los productos que cuentan con varios cables de alimentación, debe desconectar todos los cables de alimentación para cortar por completo la alimentación eléctrica del sistema.

Advertencia sobre las baterías

Precaución – Si las baterías no se manipulan o reemplazan correctamente, se corre el riesgo de que estallen. En los sistemas que cuentan con baterías reemplazables, reemplácelas sólo con baterías del mismo fabricante y el mismo tipo, o un tipo equivalente recomendado por el fabricante, de acuerdo con las instrucciones descritas en el manual de servicio del producto. No desmonte las baterías ni intente recargarlas fuera del sistema. No intente deshacerse de las baterías echándolas al fuego. Deshágase de las baterías correctamente de acuerdo con las instrucciones del fabricante y las normas locales. Tenga en cuenta que en las placas CPU de Sun, hay una batería de litio incorporada en el reloj en tiempo real. Los usuarios no deben reemplazar este tipo de baterías.

Cubierta de la unidad del sistema

Debe extraer la cubierta de la unidad del sistema informático Sun para instalar tarjetas, memoria o dispositivos de almacenamiento internos. Vuelva a colocar la cubierta antes de encender el sistema informático.

Precaución – No ponga en funcionamiento los productos Sun que no tengan colocada la cubierta. De lo contrario, puede sufrir lesiones personales y ocasionar daños en el sistema.

Advertencia sobre el sistema en bastidor

Las advertencias siguientes se aplican a los sistemas montados en bastidor y a los propios bastidores.

Precaución – Por seguridad, siempre deben montarse los equipos de abajo arriba. A saber, primero debe instalarse el equipo que se situará en el bastidor inferior; a continuación, el que se situará en el siguiente nivel, etc.

Precaución – Para evitar que el bastidor se vuelque durante la instalación del equipo, debe extenderse la barra antivolcado del bastidor.

Precaución – Para evitar que se alcance una temperatura de funcionamiento extrema en el bastidor, asegúrese de que la temperatura máxima no sea superior a la temperatura ambiente establecida como adecuada para el producto.

Precaución – Para evitar que se alcance una temperatura de funcionamiento extrema debido a una circulación de aire reducida, debe considerarse la magnitud de la circulación de aire requerida para que el equipo funcione de forma segura.

Aviso de cumplimiento de la normativa para la utilización de láser

Los productos Sun que utilizan tecnología láser cumplen los requisitos establecidos para los productos láser de clase 1.

Class 1 Laser Product
Luokan 1 Laserlaite
Klasse 1 Laser Apparat
Laser Klasse 1

Dispositivos de CD y DVD

La siguiente medida se aplica a los dispositivos de CD y DVD, así como a otros dispositivos ópticos:

Precaución – La utilización de controles, ajustes o procedimientos distintos a los aquí especificados puede dar lugar a niveles de radiación peligrosos.

Nordic Lithium Battery Cautions

Norge

Advarsel – Litiumbatteri — Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.

Sverige

Varning – Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

Danmark

Advarsel! – Litiumbatteri — Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

Suomi

Varoitus – Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

Index

A

AC version
  connecting power cables, 62
  power requirements, 97
  power supply, 15
adding a disk drive, 75 to 77
airflow requirements, 16, 17
Autotermination Indication LED, 14, 89

B

back of array, 12 to 14
back panel LEDs, 14, 88
bezel
  nameplate, 9
  removing, 11, 91
Binary SCSI ID LEDs, 86

C

cables
  AC connections, 62
  DC connections, 65 to 66
  optional cables, 5
cleaning
  back fan screens, 93
  front bezel screen, 91 to 93
  rear fan screens, 93
connecting
  DC grounding cable, 64
  DC input power cable, 65
  power cables, 62
cooling system, 16

D

DC grounding cable, connecting, 64
DC input power cable, connecting, 65
DC version
  assembling the DC input power cable, 25 to 34
  connecting power cables, 64 to 66
  connection materials, 25
  DC supply and ground conductor, 99
  isolating the chassis, 66
  overcurrent protection, 99
  power requirements, 98
  power supply, 15
Disk Drive LED, 84
disk drives
  adding, 75 to 77
  naming conventions, 76
  removing, 78
  software configuration procedures, 76
disk management
  Sun StorEdge S1 Storage Subsystem Manager 2.0 software, 19

E

electrical site requirements, 97
electrical specifications, 97

environmental specifications, 100

F

features, 3
foam fillers, 19
front bezel
  features, 7
  removing, 11
front of array, 7 to 8

H

hardware requirements, 23

I

installation
  cable length, 24
  connecting cables, 59 to 67
  hardware requirements, 23
  number of units, 24
  power cables, 25 to 34
  powering on, 67 to 69
  preparing for, 22 to 24
  rack mounting, 36 to 49
  setting SCSI IDs, 57 to 58
  tools and equipment needed, 23
internal components, 15 to 19

L

LEDs
  Autotermination Indication, 14, 89
  back panel, 14, 88
  Binary SCSI ID, 86, 87
  Disk Drive, 84
  System Power, 14, 84, 88
  System Summary Fault, 14, 84, 88

M

maintenance
  checking LEDs, 83 to 90
  cleaning screens, 91 to ??, 93
  powering off, 82
  removing and replacing, 94

N

nameplate, 7
  reinserting, 10
  removing, 9
narrow SCSI, 61, 90
narrow SCSI devices, 89
NEBS certification, 3, 100
Netra st D130, removing, 94

O

optional cables, 5

P

physical specifications, 96
power cables
  assembling, 25 to 34
  connecting, 62
power supply
  AC version, 15
  DC version, 15
power switch, 12
powering off the array, 82
powering on the array, 68
preparing the host system, 24
product overview, 2 to 19

R

rack mounting
  19 inch four-post rack, 37
  two-post relay rack, 48
removing a disk drive, 78

S

SCSI cables, connecting, 60
SCSI ID
  base address, 58
  binary SCSI ID LEDs, 87
  setting, 13, 57 to 58
  switch, 13, 58
SCSI installations
  LVD SCSI-3, 54
  mixed, 55
  single-ended, 52
SCSI ports, location, 60
ship kit contents, 4
software
  Solstice DiskSuite, 79
  VERITAS Volume Manager, 79
software configuration, 76
software considerations, 19
Solaris device entry, 76
Solstice DiskSuite software, 79
specifications
  electrical, 97
  environmental, 100
  LVD SCSI port pins, 100
  physical, 96
storage management software, 19
Sun StorEdge S1 Storage Subsystem Manager
  software, 19
System Power LED, 14, 84, 88
System Summary Fault LED, 14, 84, 88

T

tethers
  reinserting, 93
  removing, 91
tools and equipment needed, 23
troubleshooting, 83
two-post relay rack, 48

V

VERITAS Volume Manager software, 79

W

wide SCSI, 60, 90